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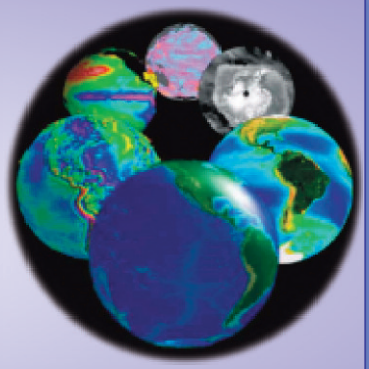

Dear Members of the PORSEC Association,

This issue of our Bulletin of the Association brings you an update on the PORSEC 2016 conference. Be sure to read the details from the Local Organizing Committee in this issue including: conference high lights, tutorial and tourist opportunities. For the discussion forum of the bulletin, we have a commentary by colleague, Dr. Jonathan Lilly, about the decision of Australia's national scientific agency to cease basic climate research, because it is now clear that the climate is definitely changing. This discussion was also published on Feb 12, 2016, in the Science section of the Huffington Post: http://www.huffingtonpost.com/jonathan-lilly/in-times-of-change-austra_b_9203140.html

As you know by now, the PORSEC in 2016 has the theme "PORSEC 2016: Enabling Earth Observations in support of global coastal, ocean and climate change research and monitoring - The 13th Pan Ocean Remote Sensing Conference". It, and the preceding capacity building tutorial, will be held in Fortaleza, Brazil, November 3-11, 2016 with registration and an icebreaker on the day before the conference starts (following the tutorial). There are many great-sounding sessions planned that would cover most oceanographic topics. General information can be found at: http://www3.funceme.br/eos.porsec/uploads/data/porsec_2016_fortaleza_brasil.pdf

Next item reports and calls for ideas for the following PORECs in 2018 and 2020, and a discussion of the role of the PORSEC Climate committee, with a request for YOU, our members, to tell us how your colleagues at home are approaching climate change and their view of the PARIS Climate Change Meeting that has just concluded. A special session is planned at PORSEC2016 about the role of Remote Sensing as a tool for policy making and monitoring compliance with the Dec. 2015 Paris Climate Accord.

Perhaps you can find funds to bring a student or younger colleague for the tutorial, which takes place just before the conference and allow those young persons to participate in some of the PORSEC 2016 sessions. The world will need well-informed and well-connected scientists for the future. We have also requested financial support from a few organizations, so we hope to provide a few scholarships for at least partial support. It is time NOW to apply for local support and emphasize the tremendous growth opportunity that an international meeting provides for young scientists.

The Special Issue of the International Journal of Remote Sensing solicited in conjunction with our conference in Bali 2014 is about to be published. The review process has concluded, and 10 of the 11 papers accepted have already been published online.

Best regards,

Co-Editors Gad Levy and Kristina Katsaros
Gad AT porsec.nwra.com, Katsaros AT whidbey.net *

**we use "AT" in the email addresses herein to avoid phising*

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Update on Preparations for PORSEC 2016

The Earth Observation Laboratory from Sea Science Institute – LABOMAR, an Institute of the Federal University of Ceará - UFC, Brazil, will host PORSEC 2016 with the theme "*Enabling Earth Observations in support of global coastal, ocean and climate change research and monitoring - The 13th Pan Ocean Remote Sensing Conference*" in Fortaleza, Brazil, 03 – 11 November 2016. The main conference (08-11 November) will be conducted through various plenary and technical sessions relevant to the conference theme. The conference will also host a pre-conference tutorial (03–07 November) to benefit 25-30 students selected from various countries. About 200 participants from all over the world are expected to participate in the conference, including scientists, teachers, researchers, students and industry from various fields of ocean remote sensing and technology.

Abstracts will be accepted through the PORSEC 2016 Webpage (http://porsec2016.virtual.ufc.br/), beginning March 14th. ***Deadline for submission has been set to June, 30th, 2016***.

The main topic for PORSEC is remote sensing of oceans by satellites, but other remote sensing techniques, using shore, ship or aircraft based sensors, are also included. PORSEC, and ocean remote sensing generally, occupy an important position at a time when carbon emissions from human activities are changing the climate of the earth, including the oceans, and growing human impacts are affecting the natural environment. The IPCC reports that the oceans are warming, sea level is rising, oceans are becoming more acidic and Arctic sea ice is melting. Other changes, in circulation, stratification, precipitation and storms have been noted and unexpected positive feedbacks can also be serious. A program committee has been formed and is now soliciting specific session proposals and conveners addressing the list of conference session themes below. Please forward your session proposals to program committee through a member of the Local Organizing Committee, Nico Caltabiano (nico.caltabiano AT clivar.org), by 14th March 2016.

CONFERENCE SESSION THEMES

1. Large scale oceanography / climate

Sea Surface Temperature; Sea Surface Height, Sea Surface Salinity; Winds

2. Coastal impacts

Mangroves; Algal blooms; Sediment transport, Sea level rise impacts

3. New technologies and image processing

4. Extreme events

Cyclones; Waves; Storm surges; Sea level rise monitoring; El Niño, La Niña; Tropical Atlantic Dipole

5. Operational Remote Sensing

Oil spills; Ocean state; Fisheries

6. Outreach

Tutorial:

Following the success of the previous PORSEC tutorials (held since 2000), the pre-conference tutorial workshop will be held for 5-days from November 3rd to 7th, 2016. The course will stress hands-on-training of the applications of readily available remote sensing data for oceanographic applications including the remote sensing of marine fishery resources. As in the courses in Guangzhou (2008), Keelung (2010), Kochi (2012), and Denpasar (2014), the tutorial will also include training on the use of in situ measurements and on their collocation, analysis and assimilation with remotely sensed data. The PORSEC education committee, chaired by Stephanie King, along with the LOC and head instructor Cara Wilson are currently revising the tutorial curriculum.

Topics to be taught at the Tutorial include Theoretical and Practical Part:

Satellite Remote Sensing (Visible): Ocean Color
Satellite Remote Sensing (Thermal): SST
Satellite Remote Sensing (Microwave): Surface Winds, Altimetry, Oil-spill detection
Statistical Data Analysis
Satellite Data Assimilation
Remote sensing applications for fisheries
Combination of Remote Sensing products for use in Oceanography
Remote Sensing for Water Management optimization: water resources
Management Decision-Making

Publications:
In addition to a special issue of the International Journal of Remote Sensing, which we have following each PORSEC since 2006, an issue inspired by PORSEC 2016 was discussed with the editorial board of Environmental Research Letters (ERL) and will be published, should there be sufficient suitable contributions that meet ERL's goals and pass its peer review.

PORSEC Discussion: Seeking to Adapt, Australia Jettisons Climate Research

Jonathan Lilly (lilly (at) nwra (dot) com)
Senior Research Scientist
NorthWest Research Associates

In early February 2016, the head of Australia's national scientific agency, the Commonwealth Scientific and Industrial Research Organisation or CSIRO, dropped a bombshell on the global scientific community. In a letter to his staff and later interviews, CSIRO Chief Executive Dr. Larry Marshall stated that because it is now clear that the climate is definitely changing—thanks in part to the successful efforts of CSIRO researchers—climate research is no longer needed. The burning question now, he argued, is how society can best adapt to a new reality. But the change in focus will come at a price. "With finite resources, we must pick and choose what to prioritize," he wrote.

Thus, he announced, he would make room for growth by lopping off the very division he was praising, culling 110 of the 140 climate-related scientific research positions in CSIRO's Oceans and Atmosphere section. As many observers have noted, these cuts will effectively eliminate Australia's climate observation and prediction capabilities, since these long-term efforts, directed toward societal benefit rather than profit, are dependent upon sustained federal support.

The response from the global scientific community to this abrupt abandonment of climate research has been one of shock, outrage, and bewilderment. More than two thousand ocean and climate researchers (myself included)—representing a substantial fraction of the global expertise in these areas—have signed an open letter, entitled "Australia's climate research is far from done", emphasizing the critical importance of this work for Australia, as well as for the rest of the world, to be able to accurately predict and adapt to climate change.

A common thread in these responses is the crucial question: How do you expect to be able to adapt, if you don't know what to adapt to? It is like the National Institute of Health saying it is time to stop studying diseases and start curing them; the understanding and the cure are two facets of the same process. Thus, the logic that climate change is settled, and therefore, climate scientists are no longer needed, is fundamentally flawed.

To understand this situation better, I spoke with two CSIRO climate scientists. Dr. John Church is one of the world's leading experts in global sea level rise. Dr. David Frey, whose name has been changed, spoke with me on the condition of anonymity.

Climate science is settled?

Dr. Marshall's claim that CSIRO researchers have been "incredibly successful" in"proving the existence of climate change" suggests that scientists have been occupied with repeatedly testing the single hypothesis that climate change is happening, and coming up with an affirmative answer, over and over again. This reflects a fundamental misunderstanding of what climate scientists actually do.

That the climate is changing has been considered a well-establish fact by the scientific community for close to two decades now. Scientists at CSIRO and elsewhere have been busy not simply answering a yes/no question, but studying the processes that make up the climate system, including the causes of regional variability. Such understanding is absolutely essential for prediction and mitigation.

"With finite resources, we must pick and choose what to prioritize"

The two CSIRO researchers I spoke to gave numerous examples to illustrate this point, as did many of the responses from external scientists. Here is one, from David Frey: "Northwest Australia might be a good place for us move our agriculture," in the face of a changing climate, "but if you don't know whether it's going to be wetter or drier, it doesn't make sense to spend the many millions of dollars you would need to make this change." In other words, you can't adapt to what you don't understand.

Has the director based his assessment of the value of the climate research at CSIRO on communication with the affected scientists? The scientists I interviewed said the level of communication prior to last week had been zero. "We don't have any contact with him," said David Frey, before adding, "If he had talked to any of us, there is no way he would have said that climate change is all figured out."

The human cost

Beyond this apparent misunderstanding about what climate research actually entails, Dr. Marshall's decision reveals a misunderstanding of something even more fundamental: people. Who wants to work for an institute that has a reputation for mass firings of successful researchers?

Needless to say, the scientists in the affected divisions are far from inspired. "Shocked. Devastated. Appalled," is how John Church describes the reaction. "We all went into this field not because we would make a lot of money, but because a lot of us care about what we do, and we want to make a difference for the world," says David Frey. "So when you spend your life to build up your expertise in this area, and someone tells you it's not important anymore, it's very hard to take."
In his letter last week, Larry Marshall wrote that CSIRO's educational programs have been particularly successful in inspiring children. "When we inspire a child, the payback is exponential and delivers for decades." But his recent decisions are likely to have the opposite effect.

> "We all went into this field not because we would make a lot of money, but because a lot of us care about what we do, and we want to make a difference for the world"

After this experience, "I can no longer go in front of a classroom and tell students what a great job I have," says David Frey. "I would not advise students to go into science if they want to stay in Australia." John Church concurs. When asked what messages are being sent to the next generation, he responded: "World quality science is not valued in Australia. Do not trust CSIRO. If you are interested in a science career, go elsewhere."

Part of a plan?

Rather than an isolated event, the recent announcement is seen as the terminal end of a long slide, with repeated rounds of budget cuts and layoffs in recent years. Funding for public-good science has been harder and harder to find, researchers told me, with increasing pressure to find projects that would be funded by an industry backer. Fundamental climate research just doesn't fall into that category. While it is of great benefit to society as a whole, it is simply not profitable to industry in the short term.
In Larry Marshall's view, climate change is one aspect of a profoundly uncertain future. Adaptation is necessary for survival, and he sees his organization as leading the way by first transforming itself into a profit-generating enterprise, drawing from his extensive experience in private industry. "We cannot rest on our laurels as that is the path to mediocrity," he wrote, arguing that re-invention is necessary "in order to navigate a new and uncertain future."

In a revealing interview last year, he made clear that his strategy requires an initial investment from CSIRO in order to attract venture capital funds, leading to research that would benefit both the public and investors. But where will such funds come from? The CSIRO scientists I spoke with speculated that the real motivation behind cutting their jobs is to free up the cash that will enable these new initiatives.

Thus, rather than a naive act of an ill-informed director, this recent announcement may be something else entirely: from a leader whose stated priorities are innovation and profitability, and determined to adapt his organization to leaner times, the intentional sacrifice of a division that does not contribute to those goals.

Yet few decisions are irreversible. Faced with such an international outcry, one might hope that a wise leader would reassess his strategy, thereby demonstrating himself the very adaptability that he hopes to inspire in others, and leading by example.

http://www.huffingtonpost.com/jonathan-lilly/in-times-of-change-austra_b_9203140.html

Call for preliminary pre-proposals for PORSEC 2018 & 2020

The PORSEC Scientific Organizing Committee will consider venues for PORSEC 2018 and 2020 and vote on a venue for PORSEC 2018 and possibly 2020 at its meeting at its next conference, which will be in Brazil PORSEC2016 (see updates separately in this issue). At this time, the executive committee of the PORSEC Association is seeking suggestions and pre-proposals for site and potential organizers in order to start informal discussion about the locations of the PORSECs, so that strong proposals could be considered by the SOC at PORSEC2016. These will be the 14th and 15th biennial PORSECs and will take place any five consecutive days between September and November, preceded by five days capacity building tutorial course at a nearby venue.

In suggesting a location, please consider the following:

(1) The need for a very strong local organizing committee.

(2) Affordability and accessibility to the majority of our membership and our commitment to have significant representation from developing countries.

(3) Availability of suitable meeting and lodging facilities at affordable price for both the conference and the tutorial. Conference and tutorial may be at two different, yet near by locations. Tutorials are often held on a university campus.

(4) Any financial contributions from local space agencies, private, and public sector to support the meeting.

Potential locations for a future PORSEC that were mentioned in past SOC discussions include Malaysia, Vietnam, and Japan (site of the first PORSEC). To this end, PORSEC President and Vice-President visited potential sites in Japan in 2014 and 2015 (see trip report).

Please forward your suggestions, to include potential locations and organizers by email to porsec AT porsec.nwra.com.

Report on visits to Japan by DanLing (Lingzis) Tang and Gad Levy

DanLing (Lingzis) Tang and Gad Levy were invited to inspect several locations in Japan as potential venues for a future site for a PORSEC meeting. The tours included visits to two cities each, and visits with representatives of eight other cities at an exposition in Tokyo. Lingzis visited Kanazawa and Okinawa (site of the first PORSEC), and Gad visited Tsukuba (city of science with a JAXA space center and numerous research institutions) and the port city of Yokohama. The visits included also some cultural events and tourist attractions. Our overall impressions from the visits was that Japan is well deserving a serious consideration as a site for future PORSEC: we are almost assured of having a very strong local organizing committee should we go to Japan; Most locations in Japan are accessible to the majority of our members, and many, but not all, have suitable meeting and lodging facilities at affordable price for both the conference and the tutorial; and practically all cities and prefectures have generous subsidies and financial aid packages for international meetings held locally. We encourage our Japanese members to contact us so we could put them in touch with the contacts we have made and to consider organizing a future PORSEC in Japan.

Lingzis and Gad

Yokohama cityscape

Lingzis visiting Kanazawa

PORSEC 2014 –
Final list of accepted papers
International Journal of Remote Sensing

TRES-SIP-2014-0057

Spatial data analysis and remote sensing for observing tsunami-inundated areas

Sambah, Abu Bakar (contact); Miura, Fusanori

Abstract: The occurrence of natural disasters is almost impossible to reduce, but its impact can be minimized by an initial assessment related to tsunami vulnerability mapping and the observation of tsunami inundation areas. The development of remote sensing technology and its applications enable the use of satellite imagery for observing the affected areas due to tsunami. The study aims to recognize areas potentially affected by tsunamis, and to develop a method for extracting the required information from middle resolution satellite images, ALOS AVNIR-2, for observation of tsunami affected areas in the coastal area of Miyagi and Iwate Prefecture, Japan. The focus of the analysis is on the land change due to tsunami events using the indicator of vegetation value, water value, and soil value, calculated using the algorithm of NDVI, NDWI, NDSI, and MSAVI. The inundated areas are created using spatial multi-criteria analysis with the use of several parameters. The analysis shows that tsunamis caused the decrease of the NDVI and MSAVI value and the increase of NDSI and NDWI. The ranges of the indices in the tsunami inundated areas were calculated using the after event image. It is considered that the pixels which have all of the indices in these ranges could be identified as tsunami inundation areas. Range value that the indices have in the inundated area are 0.00 to 0.075 for NDVI; 0.075 to 0.25 for NDWI, -0.237 to -0.137 for NDSI, and 0.012 to 0.037 for the MSAVI. The results of the analysis show the possible use of the algorithm in observing areas that could be affected by tsunami disaster.

TRES-SIP-2014-0058

Laboratory study of cross-polarized radar return at gale-force winds

Troitskaya, Yuliya; Abramov, Victor; Ermoshkin, Aleksey; Zuikova, Emma; Kazakov, Vasiliy; Sergeev, Daniil; Kandaurov, Alexander; Ermakova, Olga (contact)

Abstract: This paper presents data of laboratory experiments on a high-speed wind-wave flume of Institute of Applied Physics, which are devoted to the investigation of the X-band co-polarized and de-polarized radar return in a wide range of high wind speeds (from 8 to 40 m/s).Microwave measurements were accompanied by the measurements of air-flow and wave field parameters. Experiments showed that alternatively to the co-polarized return, the dependency of the de-polarized return on the wind speed does not saturate, although the growth rate decreases at wind speeds exceeding 30 m/s. Comparison of the experimental data with the composite-surface Bragg scattering model for the measured parameters of the wind and waves showed, that the model is in agreement with measurements of microwave co-polarized return, but fails to describe the de-polarized radar return. The obtained dependency of de-polarized radar return was compared with the empirical geophysical model function based on collocated airborne and satellite data.

TRES-SIP-2014-0069

Rainband feature tracking for wind speeds around typhoon eyes using multiple sensors

He, Shuangyan; Liu, Antony; Yu, Cheng-Ku; He, Zhiguo (contact);Yang, Jingsong; Zheng, Gang; Chen, Ying

Abstract: In this paper, five typhoon cases observed by quasi-concurrent satellite-based Synthetic Aperture Radar (SAR) and Moderate Resolution Imaging Spectroradiometer (MODIS) were studied with a feature tracking technique. The rainband features around typhoon eyes are first delineated using wavelet analysis, and then the wind speeds are estimated by this feature tracking technique, using quasi-concurrent multi-sensor images. It is found that the feature-tracking-estimated wind speeds are reasonable compared with the maximum wind speed reported by the Joint Typhoon Warning Center (JTWC) which accounts for the radial dependence of the wind speed by using the Rankine combined vortex approximation. In a specific case, with the aid of Doppler radar observations near the northern coast of Taiwan, the wind speed estimates based on the multi-sensor also show consistent results. This study demonstrates that the local wind distribution of cyclonic winds around typhoon eyes at different radial distances from the typhoon centres may be derived from rainband feature tracking using quasi-concurrent multi-sensor images. This technique may offer useful wind information for typhoon simulations and forecasts.

TRES-SIP-2014-0075

Inter-annual variation of Bigeye tuna (Thunnus obesus) hotspots in the eastern Indian Ocean off Java

Syamsuddin, Mega (contact); Saitoh, Sei-ichi; Hirawake, Toru; Syamsudin, Fadli; Zainuddin, Mukti

Abstract: Remotely-derived environmental variables including sea surface height anomaly (SSHA), sea surface temperature (SST), Chlorophyll-a (Chl a), eddy kinetic energy (EKE), mixed layer data set of argo float (MLD), Niño 3.4 index and bigeye tuna catch data during 1997-2008 were used to analyze ocean climate variability and how they relate with the hotspots of bigeye tuna catch in the eastern Indian Ocean off Java. The empirical orthogonal function (EOF) was performed to obtain a more detailed structure of the spatial-temporal ocean variability in the region. The results showed that the first EOF modes of Chl a, SSHA and SST accounted for 42.8%, 36.5%, and 27.4% of total variance, respectively, and those corresponded with inter-annual signal. The spatial patterns of the first EOF modes of SSHA, SST and Chl a gave a very typical cold water of SSHA, low SST and high Chl a concentration located along the southern coast of Indonesian archipelago and warm water of SSHA, high SST and much low Chl a concentration in the offshore region to make frontal areas along the latitudinal line around 10–12ºS. The EOF analysis further revealed strong relationship of the El Niño event with the favorable oceanographic conditions resulting in significant increase in bigeye tuna catch. The averaged hook rate of 0.71 (0.43) was recorded during El Niño (La Niña). Major hotspots located off the confluence region and frontal areas around 11–16°S and 110–118°E and herewith pointed as the most favorable oceanographic conditions for bigeye tuna catch in the eastern Indian Ocean off Java.

TRES-SIP-2014-0077

Validation of MERIS sensor's CoastColour Algorithm for Waters off the West-Coast of India.

Nimit, Kumar (contact); Lotliker, Aneesh; Srinivasa Kumar, T.

Abstract: Chlorophyll-a (chl-a) values retrieved using MERIS (MEdium Resolution Imaging Spectrometer) CoastColour (CC) algorithm were evaluated for the coastal waters off the west coast of India, against in-situ observations made as a part of SATellite Coastal and Oceanographic REsearch (SATCORE) programme. These observations include profiles of surface solar irradiance (Es) along with profiles of upwelling radiance and downwelling irradiance, measured using a hyperspectral radiometer. The chl-a was also estimated from water sample. Further, remote sensing reflectance (Rrs) and chl-a were retrieved from MODIS (MODerate-resolution Imaging Spectroradiometer)-Aqua, using the OC3M algorithm, and from MERIS, using the OC4E algorithm. Additionally, to understand the long term seasonal variability, chl-a retrieved from the MERIS-CC algorithm was overlaid on monthly mean chl-a time-series data from MODIS. Comparison of chl-a from MERIS-CC with that of in situ, showed a large scatter around the linear trend line. We observed that chl-a from MERIS-CC was underestimated for two thirds of the observations, whereas the same in case of MODIS and MERIS was 51% and 44% respectively. Statistical analysis showed better performance of chl-a retrieval using the operational OC4E algorithm as compared to that of MERIS-CC. The time-series analysis showed a good match between in situ chl-a and the same derived from MODIS using the OC3M algorithm. Whereas MERIS-CC algorithm showed inconsistency in match-up with regard to magnitude as well as trend. The inconsistency was more prominent during low chl-a scenario during northern winter. We infer that algorithms such as OC4E and OC3M that employ bands from the blue and green region of the spectrum offers better chlorophyll retrieval in waters with high concentration of TSM (Total Suspended Matter) or CDOM (Coloured Dissolved Organic Material), in comparison to CoastColour which uses all the bands across the spectrum.

TRES-SIP-2014-0078

Dynamically adapted ship parameter estimation using TerraSAR-X images

Tings, Björn (contact); Bentes da Silva, Carlos; Lehner, Susanne

Abstract: This article describes how the estimation of ship parameters from ship signatures on TerraSAR-X images can be adapted dynamically using combinatorial optimization and regression analysis. Research in the field of ship detection commonly addresses the improvement of processors with regard to accuracy performance of detection and of parameter estimation. While most research implies beneficial improvements to the processors, the different techniques are rarely compared or combined. In this article Monte-Carlo combinatorial optimization (Cross-Entropy Method) is used to evaluate the performance of improvements to parameter estimation and the performance of combinations of these improvements. Then Multiple Linear Regression analysis is applied to increase the accu-

racy of parameter estimation further. The underlying data set consists of TerraSAR X Stripmap, ScanSAR and ScanSAR Wide multi look ground range detected (MGD) images acquired over the North Sea and the Baltic Sea with HH or VV polarisation. Validation data is provided by the Automatic Identification System (AIS). The optimization algorithm assesses optimal parameter settings and appropriate combinations of techniques dedicated to this dataset. The resulting processor provides a significantly higher accuracy of ship parameter estimation.

TRES-SIP-2015-0001

On the use of satellite-measured chlorophyll fluorescence for monitoring coastal waters

Gower, Jim (contact)

Abstract: Images of solar-stimulated chlorophyll fluorescence are available from satellite sensors such as MERIS and MODIS, and could be much more widely used for monitoring coastal productivity and plankton blooms. This paper compares MODIS satellite images of sea surface chlorophyll fluorescence, and of chlorophyll concentration as indicated by the standard green/blue ratio, using images made available in a 1km spatial resolution in near-real-time by the NASA Oceancolor web system. In some cases, the implied surface chlorophyll distributions from the two sources agree, and in others they show major differences. Significant disagreement occurs in some coastal waters, where the standard chlorophyll ratio product appears compromised by CDOM. The paper shows images from western Canada, and from Bali and the Yellow Sea, areas of interest to present and past PORSEC meetings. The Yellow Sea and to a lesser extent the Bali examples suggest value in fluorescence imaging. In western Canada, the case for using the fluorescence signal is much stronger, in that coastal blooms are much easier to detect using fluorescence rather than the standard "chlorophyll" product.

TRES-SIP-2015-0003

Construction of long-term data set of sea surface wind speed/stress vectors by continuous satellite observations

Kameda, Suguru (contact); Kutsuwada, Kunio

Abstract: Using three types of scatterometer data (the QSCAT/SeaWinds, MetOp-A/ASCAT and ERS-1,2), we construct a gridded data set of wind/wind-stress vectors with continuous time series for investigation of long-term variation of ocean surface wind. The present studies investigate differences in wind fields between two products in the overlapped periods: in 2008 for the QSCAT and ASCAT products and in 2000 for the QSCAT and ERS products.

Systematic differences are found in the meridional components, showing that the anomalies in the ASCAT and ERS products from that by the QSCAT's are positive (northward) in the northern hemisphere and negative (southward) in the southern, respectively, hemisphere, corresponding to poleward anomalies. These poleward anomalies are also found in the monthly mean fields, and not so clearly in the daily mean ones, in which there are meridionally striped patterns in the mid latitude areas, suggesting that they are caused by the differences in the satellites' orbits and measurement timings. Similar comparisons are also made in the wind-stress curl field, which is a driving force of oceanic currents. The poleward anomalies are not so in the annual mean field but there are meridionally striped features in the mid-latitude areas. Time series of the wind-stress curl are made in the subtropical and subarctic circulation regions of the North Pacific for investigation of climate change using corrected times series. The result reveals that the magnitudes of the wind-stress curl in both the regions are weakening since the beginning of 2000s, reflecting that they would be caused by the weakening of the Westerlies.

TRES-SIP-2015-0004

Distribution of oil spills in inland seas based on SAR image analysis: a comparison between the Black Sea and the Caspian Sea

Ivanov, Andrei (contact); Kucheiko, A.A.

Abstract: This paper presets the results of routine satellite oil spill monitoring in the Eastern Black Sea (2011-2013) and the Northern & Middle Caspian Sea (2009-2013) by analysing synthetic aperture radar (SAR) images acquired by spaceborne SARs on board the Envisat, Radarsat-1, and Radarsat-2 satellites. The focus of operational monitoring is to provide information that assists in adequate responses, and further investigates the problem of recent oil pollution in these seas. A number of state-of-the-art technologies developed by SCANEX have been used to address this problem. For example, GeoMixer allows the integration and combination of all information needed for analysis by integrating all detected and verified spills and combining annual oil spill distribution maps and comparing them. Distributions of oil spills in the Black Sea and in the Caspian Sea are quite different, i.e., in their spatial

patterns. In the Black Sea, the most important source of oil pollution is tank washing in the open sea (producing spills of 20-100 km2 or more) and illegal discharges. In the Caspian Sea, most of the detected oil spills in the northern and middle section are from small ship-made discharges (< 10 km2) related to cargo traffic and fisheries. In spite of the oil exploration and production (LUKOIL and others) in the northern Caspian Sea, no oil spills related to oil production have been detected. An ill-estimated source is natural oil seeping, mainly in the southern part of the Caspian Sea. It is therefore concluded that the distribution of oil spills in a particular sea may depend strongly on a number of causes, including ship and tanker traffic.

TRES-SIP-2015-0006

Remote sensing of the impacts of construction in coastal waters on suspended particulate matter concentration - the case of the Yangtze River Delta, China

Cai, Lina; Tang, DanLing (contact); Levy, Gad; Liu, Dongyan

Abstract: This study investigates the capability of high-spatial-resolution Landsat Thematic Mapper (TM) data to sense and document Suspended Particulate Matter Concentration (SPMC) variability due to the influence of large structures in coastal waters. Two bridges, located in the coastal waters of the Yangtze River delta, are used as examples. A new SPMC inverse model, relating SPMC to TM optical properties through linear regression in the red and near infrared bands, is developed. In total, 780 samples and thirty transects taken between 2006 and 2011, were used to compare and contrast SPMC at locations upstream and downstream of the bridges. The comparisons show: (i) Within 0.3 km downstream from the bridges, SPMC mostly increased by 3% - 60% (8.40 mg˜l1 - 176.29 mg˜l1); (ii) When SPMC values upstream were low (less than 300 mg˜l1), the area of increase can extend to 3.0 - 6.5 km downstream; (iii) Under conditions of high turbidity (> 400 mg˜l1) upstream, decreases in SPMC could be observed in the range of 0.3 - 6.5 km downstream. The bridges can affect SPMC by blocking the transport of upstream suspended particulate matter (deposition) and through stirring of the sediments near the base of bridges' piers (resuspension). The results can be generalized to other offshore engineering structures.

TRES-SIP-2015-0007

An analysis of atmospheric gravity waves observed in synthetic aperture radar images acquired over the Northern Caspian Sea

Ivanov, Andrei (contact)

Abstract: The generation and propagation of atmospheric gravity waves (AGWs) in the troposphere over the land and the ocean are common phenomena. Because AGWs have the properties of waves, they create on the sea surface (and, in turn, on synthetic aperture radar (SAR) images of the sea surface) specific surface manifestations – a series of groups of quasi-parallel strips (or wave-like patterns) of different intensity. Data collected from remote sensing satellites during recent years have shown that these waves are very often generated and extend over the Caspian Sea. The synthetic aperture radar (SAR) images acquired by the Envisat, Radarsat-1 and Radarsat-1 satellites over the Northern Caspian Sea during monitoring in 2009-2012 have allowed a detailed study of these AGWs. In this paper, the analysis of a number of SAR images containing AGW manifestations is performed using image analysis and calculations of characteristics of the lower atmosphere, and the parameters of the AGWs are estimated. The model results confirm that AGWs can be generated by specific atmospheric disturbances and are able to cross the entire northern part of the Caspian Sea. A probable generation mechanism explaining the occurrence of waves over the northern part of the sea is proposed and discussed.

Climate Issues commentary by Kristina Katsaros

The Climate Committee of the PORSEC Association is proposing a session on Climate Change Issues. For PORSEC 2016, we are planning a few presentations and a panel discussion of about one hour in length. Below you will see the PORSEC Association Statement on Climate Change, first proposed in 2010 and endorsed in both 2012 and 2014 with some changes. There have now appeared some studies that attribute some effects of climate change on extreme events, but these scientific efforts have large uncertainties, since extreme events are rare and the records are short. Climate models are adequate for some attribution studies but not for others. One issue that needs more attention is the role of the continuously growing global population and what that implies for our ability to deal with the increasing greenhouse gases and the resulting warming and/or changing climate. ***We are soliciting ideas from the PORSEC membership on how to handle this session and what YOU would like to see discussed. Please review our current Statement on Climate Change and send us your comments.***

River delta Nook-sak River Bellingham WA, USA.

Photo courtesy of Frank James

THE PORSEC ASSOCIATION STATEMENT ON CLIMATE CHANGE

Issued October 2010 at PORSEC 2010 and endorsed November 2012 at PORSEC 2012 and November 2014 at PORSEC 2014

PORSEC recognizes that climate change due to human-caused greenhouse gas emissions presents a serious risk to the health and safety of human communities and indeed to all life on Earth. PORSEC endorses the 2013 findings of the International Panel on Climate Change (IPCC4). We need to start immediately planning for, and moving towards, a future in which net carbon emissions are significantly reduced, ideally to zero. With vigorous action we can develop efficient processes that avoid burning fossil fuels, improve the quality of the air we breathe and the water we drink, and maintain the integrity of our ecosystems, including the global oceans and the life within it. Such actions can also open new economic opportunities and improve the quality of human life.

Major initiatives are needed to educate the public, especially politicians and policy-makers, in the science of climate and climate change. PORSEC members can also help in smaller ways by personal example, in local actions and through their scientific work.

Notes and Announcements of interest to PORSEC members

NEWS & UPDATES

First Expedition of IIOE-2 (Goa, India to Port Louis, Mauritius) completed

The first expedition, on board Research Vessel Sagar Nidhi conducted as a part of IIOE-2 has concluded at Mauritius after exploring the western Arabian Sea for 18 days. The voyage was flagged of by the Hon. Minister of State for Science and Technology and Ministry of Earth Sciences, Mr. Y. S. Choudhary at a function held at Mormugao, Goa on 4 December 2015.

The expedition was led by Prof. P. N. Vinayachandran of Indian Institute of Science (IISc), Bangalore and Dr. Satya Prakash of ESSO-Indian National Centre for Ocean Information Services (ESSO-INCOIS), Hyderabad. 12 Indian Scientists participated representing IISc, INCOIS, NIOT (Chennai), NCAOR (Goa), NRSC (Hyderabad) and Goa University. In addition to scientists from India, there were participants from Mauritius, Israel, Singapore, Australia and UK.

The major goal of this multi-disciplinary scientific expedition was to understand the structure of water masses in the western Indian Ocean along 67?E and assess the difference in their characteristics with respect to observations made in the past. The other objective of the cruise was to understand the physical-chemical-biological characteristics in the equatorial Indian Ocean and their inter-relationships. Underwater profiles of currents, temperature, salinity, oxygen, light and chlorophyll were measured during the cruise. In addition, samples have been collected to a depth of 1000 m for various chemical and biological analyses. Samples of zooplankton were collected using nets towed from the stern of the ship.

It is expected that the data collected during this expedition will elucidate the currents and water masses in the western Indian Ocean in detail and thus further our understanding of the oceanography of the Indian Ocean.

More details and related articles are in Issue-4, of The Indian Ocean Bubble-2 available at http://www.incois.gov.in/documents/IndianOceanBubble2_4th.pdf
IIOE India would also like to invite contributions for its next issue, which is planned for release around June 2016. Kindly send your contributions latest by 30th April 2016.

Perspectives and opinions along with short reports on cruises, workshops, programmes and studies related to Indian Ocean studies are welcome from researchers at all levels.

Articles up to 1500 words in length with suitable figures and photographs may be emailed to iioe at incois.gov.in (photos of contributing authors may also be provided).

Reported by: IIOE India,
Indian National Centre for Ocean Information Services, Hyderabad, INDIA.

Four new Chinese satellites to contribute for disaster prevention

Four satellites were launched for harvest assessment, geological disaster prevention and resource surveys. Jilin-1 is called the mission led by China, which used a Long March-2D vehicle from the 603 Launch Pad at the Jiuquan Satellite launch Center's LC43.
Jilin-1 includes four satellites to produce high-definition images that will contribute forecasting and mitigate geological disasters, among other purposes. The province aims to launch 60 satellites by 2020 and 138 until 2030. By 2019, 16 satellites are expected to be in orbit as a part of a network for remote sensing. This initiative will reach coverage on the entire globe, able to provide updated data every three to four hours.
The four satellites are: Jilin-1 to operate on a 656 km sun synchronous orbit; Lingqiao-A and Lingqiao-B meant to capture videos with a 4K ultra-clear video resolution; and the micro-satellite LQSat for technology demonstration designed by CIOMP.
Read full story:
NASA

MEETINGS

EGU General Assembly 2016 Session BG3.2: "Understanding the Indian Ocean System: Past, Present and Future"

Vienna, Austria, 17 - 22 April 2016

Convener: Tim Rixen | Co-Conveners: Hermann Bange, Raleigh Hood, S.W.A. Naqvi, Birgit Gaye, Greg Cowie, Martin Visbeck

Over the last 50 years significant progress has been made in our ability to describe and model both the oceanic and atmospheric environments of the Indian Ocean and their interactions with the sea floor and coastal regimes. However, our understanding of the major processes of the Indian Ocean is still far from complete and rudimentary in many respects. The session will provide a platform to highlight recent results of physical, biogeochemical, ecological, geological, coastal and atmospheric studies from the Indian Ocean (including Arabian Sea, Bay of Bengal, southern Indian Ocean, and marginal seas such as Red Sea, Persian Gulf, and Andaman Sea). Moreover, the session will serve to illustrate some of the key research areas that are relevant to the future research on the grand challenges in the Indian Ocean System. Some of them have been formulated by the Sustained Indian Ocean Biogeochemistry and Ecosystem Research (SIBER), Oceans and Climate: Variability, predictability and change (CLIVAR) and the International Indian Ocean Expedition 2 (IIOE-2) initiatives. But others could be developed by contributions to this session.

DLR Conference on Climate Change, 2016

will be held in ***Cologne, Germany from 5 to 7 April, 2016***. The official website of the conference is now online at http://www.ccc2016.net/home

Abstract submission open for CLIVAR Open Science Conference Qingdao, China

Join the international climate community to review the state of science, prioritize international research plans, and form new collaborations at the **2016 CLIVAR Open Science Conference on September 18-25** in Qingdao, China. Abstracts are now being accepted for the meeting, as well as applications for the early career scientist (ECS) symposium and travel grants. The website has additional information about all of the activities and events taking place. The ***deadline for abstracts, travel grants, and to attend the ECS symposium is March 15***.

WORKSHOPS & TRAINING

The United Nations/India Workshop on the Use of Earth Observation Data in Disaster Management and Risk Reduction: Sharing the Asian Experience,

HYDERABAD, INDIA, 8-11 MARCH 2016.

The United Nations Office for Outer Space Affairs (UNOOSA), through its Programme on Space Applications and the UN-SPIDER platform, and the Indian Space Research Organisation (ISRO), are jointly organising the workshop in order to share experience from Asia and other parts of the World in using Earth observation for disaster management.

http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2016/workshop_india.html

IOCCG Summer Lecture Series 2016

18 - 30 July 2016, Villefranche-sur-Mer, France

The third IOCCG Summer Lecture Series, dedicated to high-level training in the fundamentals of ocean optics, bio-optics and ocean colour remote sensing will take place at the Laboratoire d'Océanographie de Villefranche (LOV), in Villefranche-sur-Mer, France from 18 - 30 July 2016.

The course content and list of teaching staff is available at: http://www.ioccg.org/training/SLS_2016.html. We are seeking applicants with a strong background in ocean optics and ocean colour remote sensing, involved in post-doctoral and/or early career research, as well as students currently undertaking their PhD studies. A total of 20 students will be selected based on the relevance of the lecture series to their current research, previous training experience and access to the knowledge in their home institution.

The Call for Applications is now open. Interested candidates should submit a completed SLS-2016 Application Form (see: http://www.ioccg.org/training/SLS_2016.html) before the ***deadline of 15 March 2016***.There is no fee to attend the lecture series but students are encouraged to

seek financial support to supplement their expenses. The LOV laboratory can provide free accommodation (shared rooms/dormitories) for most students, as well as breakfast and lunch on week days.

A limited number of scholarships will be available to help defray other expenses (flights, meals etc.), but there will be a restricted number of spaces available for scholarship students.Completed application forms should be sent by e-mail to the SLS Assistant Training Coordinator (Elizabeth Gross: egross at ioccg.org) with copies to the SLS Training Coordinator (David Antoine: antoine at obs-vlfr.fr) and IOCCG Scientific Coordinator (Venetia Stuart: vstuart at ioccg.org).

Applications received after the deadline, as well as incomplete applications, will not be considered. Successful applicants will be notified by 6 May 2016.

Workshop: "Colour and Light in the Ocean from Earth Observation, CLEO"

September 6-8, 2015, Frascati, Italy

The European Space Agency, the Plymouth Marine Laboratory and the Scientific and Organising Committees invite you to submit an abstract to the Workshop: "Colour and Light in the Ocean from Earth Observation, CLEO" (http://congrexprojects.com/2016-events/cleo) to be held in ESA-ESRIN, Frascati, Italy, on 6-8 September 2016. The workshop aim is to bring together providers of space-based and in situ ocean-colour products and the user community, including modellers. The objective is to discuss new developments and key science issues, and to define a Scientific Roadmap for the exploitation of the Sentinel-3 and other ocean-colour data for various applications ranging from scientific to operational.

We welcome submissions on the following topics:
•Ocean-Colour Applications for Climate Studies.
•Light Field in the Ocean: Primary Production and Ocean Dynamics.
•Non-Chlorophyllous Components of Ocean Optics.
•Pools of Carbon in the Ocean.
•Phytoplankton diversity at global and regional scales
Deadline for abstract submission is 15-June-2016. Please register and submit your abstract through the workshop website: http://congrexprojects.com/2016-events/Cleo/home
Looking forward to see you in Frascati.
CLEO workshop Organising and Scientific Committees

Funding Support for the 2016 Cornell Summer Satellite Remote Sensing Training Course

June 3-17, 2016, Ithaca NY

The Ocean Carbon & Biogeochemistry (OCB) Program (www.us-ocb.org) will support up to eight U.S. students or postdocs to participate in this course, including tuition, travel, and housing expenses.
If interested, please send your CV and a brief statement of interest (1 page max) to the OCB Project Office (hbenway AT whoi.edu) ***by 15 March 2016***.
The statement should describe your interest in the course and its potential to enhance your research.
Application materials will be reviewed by the OCB Project Office, OCB Scientific Steering Committee leadership, and the course organizer Bruce Monger (Cornell Univ.).
Please bear in mind that this is a full immersion class and participation for the entire 2 weeks is essential to gain all of the class benefits. Please visit the course website (http://www.geo.cornell.edu/ocean/satellite) for more information about the course content. If you have additional questions about the course, please contact course organizer Bruce Monger (bcm3 at cornell.edu).

Workshop for Early Career Geoscience Faculty

July 24-28, 2016, College Park, Maryland

This workshop will feature topics including effective teaching strategies, course design, establishing a research program in a new setting, working with research students, balancing professional and personal responsibilities, and time management. Participants must have a full-time faculty position at a two-year or four-year college or a university at the time of the workshop and must be in their first three years of full-time teaching or starting a full-time position in the fall. Applications are due March 16.

National Center for Atmospheric Research CESM Tutorial

August 8-12, 2016, Boulder, Colorado

The Community Earth System Model (CESM) Tutorial will consist of lectures on simulating the climate system, and practical sessions on running CESM, modifying components, and analyzing data. The CESM Tutorial is targeted at the graduate student level. A maximum of 80 students will be accepted with partial financial support

(lodging, per diem, ground transportation) for some students. ***Deadline to apply is March 4.***

Student/Early Career Opportunities

Postdoc – Software Development Framework Connecting Models, Remote Sensing Data, and Field Measurements
Caltech/ NASA JPL, Pasadena, California
Deadline: March 31

Postdoc – Atmospheric Climate Modeling
University of Miami, Florida

Postdoc – Byrd Polar and Climate Research Center
The Ohio State University, Columbus, Ohio
Deadline: March 1

Postdoc – Climate Change Science
University of California, Los Angeles, California

Postdoc – Climate Data Products for Impacts Analysis and Decision Support Applications
Pennsylvania State University, State College, Pennsylvania

Assistant, Associate, and Senior Scientist
Physical Oceanography, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts

Assistant Professor Oceanography
University of Washington, Seattle, Washington

Assistant Professor – Physical Meteorology – Radiative Transfer and Atmospheric Remote Sensing
Texas A&M University, College Station, Texas

Senior Physical Oceanographer/Marine Geophysicist
University of Washington, Seattle, Washington

PORSEC Database

For our database of the PORSEC Association members we would like you to enter your information directly into our web membership form, if you haven't already done so: http://porsec.nwra.com/membershipform.php
Please fill this form even if you have already given the information to us in any other format since we may not have all that information down correctly. **Please use this form to update your information whenever you have any changes.** It can also be used to pay your membership fee.
This form is also accessible through our main page (http://porsec.nwra.com) by clicking on "Join the PORSEC Association".
Please work on getting us more members; use the PORSEC home page and the above links for information. The prospective member provides us with the same information through the form. Memberships can be paid by U.S. check, if you have that available. It is too expensive to do bank transfers, so we suggest that the fee be paid to the PORSEC Association at the next conference. Any donations are also most welcome.

Information

For information about the association and links to Newsletters from the president and Bulletin issues go to: http://porsec.nwra.com/. To join the PORSEC Association go to membership on the web site or contact one of us directly. The Bulletin of the PORSEC Association is edited by Gad Levy and Kristina B. Katsaros. Production Editor Susanne Öhrvik. ***We welcome contributions about your work and about any activities of our PORSEC members that may be of interest to other members for future issues of the Bulletin.*** To submit articles for this Bulletin of the PORSEC Association, please contact gad at porsec.nwra.com or katsaros at porsec.nwra.com.