

The International ENVIRONMETRICS Society - TIES

Newsletter

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Editor: Ayesha Ali

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1. A Message from the President,

Don Stevens

(stevens@science.oregonstate.edu)

Department of Statistics

Oregon State University, USA

Dear TIES members,

TIES 2013 was held in Anchorage, Alaska, from June 10-13, and focussed on *Quantitative Methods, Applications, and Issues in Natural Resources: assessment, regulation, development, use and*

conservation. It was preceded by a short course on *Statistical Methods for Estimating Abundance of Natural Resources* on June 8 & 9. We were fortunate to have unusually warm and dry weather for Anchorage, with clear sunny days and temperatures in the mid-70's °F (mid-20's °C).



Impressive mountain view from Portage Lake, Alaska. *K. Irvine.*

This year's meeting was dedicated to my PhD Advisor, Scott Overton, who passed away in July of 2012. The theme of the meeting had already been chosen, but it seemed appropriate to dedicate the meeting to Scott's memory. Scott was the epitome of an environmental statistician, making significant contribution to ecosystem theory and environmental sampling theory and methodology. The statistical methodology underlying USEPA's Environmental

Monitoring and Assessment Program (EMAP) was largely developed by Scott and his colleagues. A session devoted to Scott's influence included talks by Bernie Patterson (an ecosystem theorist and colleague of Scott's), Ken Burnham (one of Scott's students), and by his son, Jake Overton.

The program included about 150 technical presentations that spanned three and a half days of concentrated Environmetrics, both theory and applications, and was attended by about 200 persons. The breaks were filled with animated conversation; the social events (opening reception, organized tours, and the conference banquet) provided further opportunities to renew old acquaintances and make new ones.

I have provided this information because it illustrates some of the features that set TIES conferences apart from other statistical meetings. For example, the expected attendance to JSM2013 is approximately 6,000 and with a quick look at the program, I could identify about 90 presentations sponsored by The Section on Statistics and the Environment. There may be other presentations with an Environmetrics context, but even if there are, the evidence suggests that that are as many or more Environmetrics presentations at TIES conferences as there are at JSM. Moreover, the opportunities for interaction with your colleagues and peers are much greater at TIES. The concentration of environmetricians and the stimulating and congenial atmosphere is what makes TIES conferences so worthwhile.

In the last several issues of the TIES newsletter, I have discussed at some length the relationship between TIES and ISI. I think there are two issues that bear on that relationship: one financial and one fundamental to the nature of TIES. The crux of the financial issue is the manner in which ISI apportions its overhead costs to ISI Associations. If TIES is to remain with ISI under the current fiscal arrangement, then we either have to substantially increase the dues for non-ISI TIES members or find some other way to generate revenue. The first alternative would put a substantial portion of ISI's overhead on non-ISI TIES members, which does not seem like an equitable arrangement. The second alternative would require TIES to focus on revenue-generating activities, and seems at odds with our mission statement. That leads to the second issue, the nature of TIES, and requires an articulation of the aspects of our Society that are

important to the membership and sets us apart from other professional associations.

At the Anchorage meeting, the Board scheduled two very long meetings in which we discussed several important issues that I would like to summarize to you. First and foremost, the ISI-TIES relation was discussed at great length. While the Board ultimately discussed two practical ways in which we could maintain our association with ISI, both would require a change on ISI's part in how they handle membership dues. These two ways are 1: Charge a flat rate fee for non-ISI TIES members; and 2: Charge ISI-TIES members a flat membership fee on top of the regular ISI membership. The Board believes either plan would fairly apportion the financial burden placed on non-ISI TIES members and would allow TIES to remain an ISI Association. In the event that TIES ceased to be an ISI Association, we have identified cost-effective programs to provide the services that ISI currently does, i.e. manage membership dues and membership lists.

The other major issue focused on the nature of TIES and ways in which the critical aspects of our nature can be continued if we integrate with ISI. There is a built-in conflict of interest between ISI's World Statistics Conferences (WSC) and TIES Annual Conferences, when held in the same year. As an ISI Association, TIES is expected to take an active role in organizing sessions and short courses for the WSC. If TIES does that, then we reduce potential attendance and short course opportunities at our separate AGM. The other Associations hold their Annual Meeting at the WSC, as TIES did at the 2011 WSC. If we hold our AGM in conjunction with the WSC, there is limited opportunity for TIES invited sessions, and for our plenary lectures such as the Stuart Hunter Lecture and the President's Invited Lecture. (Neither lecture occurred at the 2011 WSC). Moreover, in this case, TIES forfeits the revenue generating opportunity that the annual conference represents.

The Board feels that it is time to get further input from the general members to help us define the vision for the future of TIES, and clarify under what conditions we should withdraw our association with ISI, if at all. In order to solicit information, we will be holding a survey from which we can refine our perception of the pros and cons of being with ISI, and

then disseminate our findings to the general public before holding a vote on how to proceed with respect to ISI. The survey should be available by end of month, and open for one week. The nature of the relationship between TIES and ISI has been a concern for too long, and needs to be resolved. Now is the time to do so.

TIES is currently organized as a not-for-profit corporation under Canadian law. Canada is revising the law that deals with not-for-profit corporations, and we will need to change our formal organization to conform to the new law. We have formed a committee to coordinate with other not-for-profit Canadian corporations (e.g., The Statistical Society of Canada) as we re-formulate and replace our By-Laws with corresponding Articles. If we are to remain as a not-for-profit organization under Canadian law, this process must be completed within the next year.

The Board also discussed improving the functionality of our website, and we are looking into providing an online payment system, which could prove useful for conferences, workshops and courses. We are also looking to adding Discussion Forums and access to a membership list on the website. It was also suggested that we create Facebook and Twitter pages so that TIES has a presence in social media. If you have any other ideas or comments please email me.

Finally, you should have recently received an email regarding our upcoming elections. This year's election will be online, and ballots are open until July 31st. Please get your votes in! This will be my final message to you, as President, since the new Board will take office as of September 1, 2013.

2. TIES News

TIES meetings are generally marked by three special lectures. This year's lecturers were as follows.

Stuart Hunter Lecture: *Wildlife Diseases: Challenges and Opportunities for the Ecological Statistician*, Professor Jennifer Hoeting, Colorado State University

President's Invited Lecture: *I Never Met a Datum I Didn't Like*, Dr. Barry D. Nussbaum, Chief Statistician, US Environmental Protection Agency

Keynote Speaker: *The Challenges of Making Scientific Results Useful in Management and Political Arenas*, Gordon Reeves, Pacific Northwest Research Station, USFS

TIES Awards

Best Student Presentation: Jan Emil Banning Iverson, Denmark, *Using Stochastic Differential Equations for Wind Power Forecasting*

Honorable Mention Student Presentations: Sarah Power, USA, *Patterns of Salmon Bycatch in the Eastern Bering Sea Walleye Pollock Fishery*;

Aurore Lavingne, France, *Adding expert contribution to the spatial clustering of French Alps townships*;

Francis Hui, Australia, *Variable selection in multi-species mixture modeling*.

Distinguished Service Award:

Sylvia Esterby, University of British Columbia, Okanagan Campus, Canada.

"In grateful recognition of passionate and pioneering leadership in developing and promoting environmental and ecological statistics, and of active, professional service throughout the lifetime of The International Environmetrics Society (TIES), including being a Member of the TIES Founding Board of Directors."

Sylvia's numerous affiliations with TIES involve being Secretary, Treasurer, Publications Officer, Newsletter co-Editor, and TIES President, as well as co-organizer of numerous TIES conferences, workshops and courses. Although not a regular TIES award, we felt it appropriate and warranted to present this award to her. Thank you Sylvia!



30 years since TIES became a corporation in 1993. Sylvia Esterby, Abdel El-Sharaawi, and Ian MacNeil were, as founding members, TIES members back then. G. Chiu.

Abdel El-Sharaawi Young Researcher's Award:

This year we identified two outstanding candidates between which we could not decide (listed in alphabetical order):

1) Joanna Flemming, Dalhousie University, Canada

Joanna is an Associate Professor of Environmental Statistics in the School of Mathematics and Statistics at Dalhousie University, Canada. Joanna's research focus is on modeling dependent data (space and/or time dependencies) with particular interests in both the development and application of statistical methodology to the ecological, environmental and health sciences. Joanna's strong multidisciplinary collaborations include the Ocean Tracking Network at Dalhousie to develop a global standard for ocean management. Together, they are conducting the most comprehensive and revolutionary examination in the world of marine life and ocean conditions, and how they are changing as the earth warms. She uses such collaborations to nurture the training and development of Masters and PhD students in environmetrics.



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2) Petra Kuhnert, CSIRO, Australia

Petra is a research statistician in the Environmental and Agricultural Informatics Program within CSIRO Mathematics, Informatics and Statistics and has a PhD in Applied Statistics. Her research covers a diverse range of risk, marine and aquatic ecosystem problems, with main interests in incorporating uncertainty into deterministic models; developing non-parametric methods for analysing fish diet data to understand trophic interactions and feeding relationships between predators under climate change scenarios; and developing elicitation practices with experts on risk related issues, and then translating the expert opinion into priors to inform Bayesian models. Petra's recent work involves integrating empirical measurements with process models for improved



prediction and understanding of catchment pollutant loads and their sources entering into the Great Barrier Reef lagoon in Australia, using Bayesian hierarchical models.

Italian GRASPA group becomes GRASPA-SIS

The Italian environmetrics group GRASPA (Research Group for Statistical Applications to Environmental Problems), has been active since 1995, and since May 2013 has become a "permanent working group" of the Italian Statistical Society (SIS). GRASPA-SIS promotes statistical and interdisciplinary research in the field of environmental quality, safety and sustainability including air and water quality, epidemiology, earth science and ecology. The group fosters methodological developments and applications in fields such as spatial and spatio-temporal modelling, functional data analysis, spatial and spatio-temporal sampling and extreme values. Moreover it endorses co-operation and interchange of views among statisticians, academics from environmental sciences as well as practitioners from government and independent environmental agencies.

GRASPA-SIS intends to promote participation to international projects, workshops and conferences, by collaborating with other scientific societies and first of all with TIES. All news will appear on the website, now in renovation, www.graspa.org.

**Forthcoming papers in Environmetrics**

For forthcoming articles to be published in the society journal Environmetrics, please visit the following link

<http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%291099-095X/earlyview>

Most recent Special Issue: "Modern quantitative methods for environmental risk assessment", December 2012, Volume 23, Issue 8, Pages i-iii,

637–737. Edited by: Lelys Bravo de Guenni, Susan J. Simmons.

3. Environmetrics Conferences

3.1. Forthcoming Conferences

Already announced

ISI WSC 2013: 59th ISI World Statistic Congress – Hong Kong, August 25-30, 2013

The 59th WSC meeting will be held in Hong Kong August 25-30, 2013. The meeting venue will be the Hong Kong Convention and Exhibition Centre (HKCEC), which is a magnificent, multi-purpose venue located right in the heart of Hong Kong on the Victoria Harbour. The unique theme this year is "Youth" and a series of sessions have accordingly been organised on the designated "Theme Day".

www.isi2013.hk/

EYSM 2013: 18th Edition of the European Young Statisticians Meeting – Osijek, Croatia, August 26-30, 2013

The 18th ESYM will take place in the city of Osijek, Croatia from August 26-30, 2013. The Local Organizing Committee will be chaired by Nenad Suvak (Department of Mathematics, J.J. Strossmayer University of Osijek). The main aim of the meeting is to provide young researchers an introduction to the international statistics, ranging from pure probability theory to applied statistics.

www.mathos.hr/eysm18/

New Announcements

Statistical Science in Society, University of Waterloo, Canada, July 31 to August 2, 2013

All are welcome to attend this pre-JSM conference in celebration of the International Year of Statistics, and to launch the Canadian Statistical Sciences Institute (CANSSI), just before the JSM opens in Montreal.

The conference features outstanding speakers in sessions on social networks, statistics in health, modelling risk, exploring complex models and data, modelling dependence and statistical learning. Registration is open until July 15. For the program and registration details, see:

<http://math.uwaterloo.ca/statistics-and-actuarial-science/canssi2013>

TIES 2014: 24th Annual Conference of the International Environmetrics Society, Guangzhou, China, 15-19 December 2014

Plans for next year's TIES meeting are well under way, and the dates have been set for an end of year conference. Quanxi Shao is coordinating the meeting and is the one to contact for suggestions and comments while the program is being set. You will be notified once the conference website is available.

Email contact: Quanxi.Shao@csiro.au

METMA and TIES Regional Meeting, Cairo, Egypt, 2014

TIES is again sponsoring the METMA meeting. Abdel El-Sharaawi is organizing a joint regional TIES and METMA meeting in Cairo, with specific dates to be set now that dates for TIES 2014 are set. More details will be provided as they develop.

3.2 Meeting Reports

TIES 2013: 23rd Annual Conference of The International Environmetrics Society, Anchorage Alaska, June 10-14, 2013 *Kathryn Irvine and Ayesha Ali*



Group shot of boat cruise participants at TIES 2013. *Visit Anchorage.*

The 23rd annual conference of The International Environmetrics Society was held in Anchorage, AK

from June 10-13, 2013. The conference was well attended with 180 conference delegates from 22 different countries and 23 student delegates. Highlights of the conference ranged from statistical advances and novel applications in the broad field of environmental and ecological statistics. There were 147 oral presentations, comprising 43 technical sessions (only 8 of which consisted of contributed talks) that were delivered over 4 parallel sessions. Fourteen poster presentations were showcased in the hallway between session rooms, making for easy perusal between talks/sessions.

In addition to the plenary talks mentioned in Section 2, there was a stimulating plenary panel discussion on “Managing your Environmetrics Career – along the full cycle” organized by President-elect Bronwyn Harch and chaired by Danielle McNicol. Bronwyn and Danielle are both with CSIRO, Bronwyn as Chief of CSIRO’s Mathematics, Informatics, and Statistics Division (CMIS), and Danielle as Human Resources Manager for CMIS. The panel included an Early Career member (Devin Johnson, National Oceanic and Atmospheric Administration); two Mid-Career members (Bronwyn Harch, CSIRO Australia; Alix Gitelman, Oregon State University), and a Well Established Career member (Venkata Jandhyala, Washington State University).

Many participants enjoyed the scenic wonders of Alaska and the endless daylight by biking/walking/running on the coastal trail, following the planet walk through the city, sea kayaking, hiking at the Portage Lake area, or visiting the Alaska wildlife conservation center and taking the scenic cruise on Portage Lake.



Another fantastic view from Portage Lake, AK. *K. Irvine.*

The conference banquet was held on the Thursday evening, at the Alaska Native Heritage Center.

Guests had an opportunity to take a guided tour through authentic native habitations, browse cultural exhibits, or ride on a dog sled (minus snow at this time of year, of course). During dinner, there were colourful demonstrations of native dances, which included a native version of the “Hokey Pokey” that got the audience involved. A group of young athletes provided an entertaining exhibition of Arctic Olympic games along with a historical and cultural context of the origin of these physically demanding feats.



A dog sled ride through the Alaska Native Heritage Center. *A. Ali.*

TIES Short Course on “Statistical Methods for Estimating Abundance of Natural Resources”, Anchorage Alaska, June 8-9, 2013
Melissa Dobbie, CSIRO Australia

Thirty-five participants (heavy representation from Alaska) attended this lecture-only style short course, taught by Jay Ver Hoef, Steve Buckland, Gary White, and Don Stevens, and was held at the Hilton Anchorage as a prelude to the TIES 2013 conference. There were four modules: (in order) plot-based spatial methods (presented by Jay ver Hoef, NOAA), distance sampling methods (Steve Buckland, University of St Andrews, Scotland), mark-encounter population estimation methods (Gary White, USDA Forestry Service) and sampling design (Don Stevens, retired to Alaska!). Each presenter’s experience stood them in great stead for peppering their presentations with examples. All in all, this short course was really worthwhile attending because of its relevance to the important problem of producing valid abundance estimates and because the attendees were treated to an overview of each of the respective topics when really each could form the basis for an entire course in itself.

Italian Statistical Society Conference 2013, Environmetrics track, Brescia Italy, June 19-21, 2013

Rosalba Ignaccolo

As first official initiative of the group GRASPA-SIS, Alessandro Fassò and other TIES members organized a special track on "Space and space-time models: methods and environmental applications" at the SIS Conference. Daniela Cocchi chaired a plenary session with Håvard Rue speaking on "Advances in estimation of large hierarchical spatio-temporal models".

Other TIES members who were among the authors and speakers of the space-time track, which spanned three different sessions included: Francesca Bruno, Michela Cameletti, Francesco Finazzi, Rosalba Ignaccolo, Giovanna Jona Lasinio, Claire Miller, Alessio Pollice, and Marian Scott.

SAMSI-SAVI Workshop on "Environmental Statistics", Research Triangle Park, NC, USA, March 4-6 2013

Richard Smith, SAMSI

SAVI (Science Across Virtual Institutes) is a new international initiative of the U.S. National Science Foundation. Two of the NSF institutes, the Statistical and Applied Mathematical Sciences Institute (SAMSI) and the Institute for Computational and Experimental Research in Mathematics (ICERM) have teamed up with the Indian Statistical Institute (ISI) and four other mathematical institutes in India to form the Virtual Institute in Mathematical and Statistical Sciences (VI-MSS). As one of the activities of VI-MSS, SAMSI hosted a workshop on Environmental Statistics. The co-organizers of the workshop were Richard Smith (Director of SAMSI) and Bimal Roy (Director of ISI).

The main activity of the workshop was a sequence of 14 invited lectures (seven from each country) – there was also a poster session and two breakout sessions. Sujit Sahu (Southampton, U.K.) gamely stepped in at short notice after one of the Indian invited speakers was unable to travel due to visa difficulties.

The workshop was given a very lively start by Walt Piegorsch of the University of Arizona, who talked about assessing benchmark doses in a toxicological

risk assessment. Other environmental topics developed during the workshop included renewable energy; analysis of large satellite datasets; human health effects of air, water and noise pollution; and spatial-temporal analysis of air pollution data. Methodological themes included ranked set sampling, independent component analysis and Bayesian approaches to spatial statistics.

The two breakout sessions covered a wide variety of topics. For example, the one that I chaired started out with a discussion of the role of statistics in assessing uncertainty for climate change, and moved on to the environmental problems faced by small countries. The latter topic was particularly fueled by one of our participants from Abu Dhabi. It was pointed out that the impacts of climate change on third-world countries is often very different from those in North America and Europe, and it was suggested that climate change research needs to be more focused on such issues.

This was, overall, a very lively workshop and led to a number of plans for future activities, including a return workshop on Environmental Statistics, likely to be in Kolkata in late 2013 or early 2014.

SAMSI-NCAR Workshop on "Massive Datasets in Environment and Climate", Boulder, CO, USA, February 13-15, 2013

Richard Smith, SAMSI; Dorit Hammerling, SAMSI; Andrew Finley, MSU



Participant photo from the SAMSI-NCAR workshop. *A. Finley.*

The workshop took place at the National Center for Atmospheric Research (NCAR) Mesa Lab as part of a Statistical and Applied Mathematical Sciences Institute (SAMSI) year-long research workshop on

massive datasets that covered applications in astronomy and high-energy physics as well as the climate/environment theme. The event was also sponsored by NCAR's Institute for Mathematics Applied to Geosciences (IMAGE) and contributed to a series of activities surrounding the 2013 Theme-of-the-Year entitled "Climate Analytics." The objective of the workshop was to explore the statistical, computational, and scientific problems that arise from the analysis of very large datasets in the environmental sciences generally, and specifically in climate science. The workshop hosted 17 presentations from statisticians, climate scientists, and climate impact researchers. Workshop attendees participated in breakout group discussions focused on identifying challenges and opportunities for collaboration between scientists and statisticians. A common theme in the discussions was how to narrow the gap (or time lag) between the development of new statistical methods and their application to environmental and climate questions.

A list of presenters and other information is available at: www.samsi.info/workshop/samsincar-workshop-massive-datasets-environment-and-climate-february-13-15-2013

4. Short Courses and Workshops

NCAR/IMAGE workshop on Next Generation Climate Data Products, NCAR, Boulder, CO, USA, July 15-19, 2013

This workshop will bring together statistical and data scientists with those modeling climate and climate impacts to share ideas on improving the creation of data products. Some specific goals of the workshop are to:

- Identify data products and analytical tools needed by the climate impact research communities.
- Explore and address challenges to creating high spatial- and temporal-resolution data products, with associated uncertainty.
- Facilitate collaboration among the statistics, climate modeling, and climate impact communities.
- Form working groups, where appropriate, on specific topics that will persist beyond the workshop.

See <http://www2.image.ucar.edu/event/ngcdp13> for more information.

"The Geostatistics Days", Geosciences and Geoengineering Research Department, Mines ParisTech, Fontainebleau, France, September 12-13, 2013

This workshop brings together geostatisticians and people applying geostatistics to discuss recent developments in environmental sciences, natural resources and various other fields.

http://www.geosciences.mines-paristech.fr/en/organization/presentation-of-the-group-2/trainings-in-geostatistics/the-geostatistics-days?set_language=en

The Third International Workshop on Climate Informatics, NCAR, Boulder, CO, USA, September 26-27, 2013

This workshop focuses on opportunities for researchers in machine learning and statistics to partner with climate scientists in the development of new methods for interdisciplinary knowledge discovery.

<http://www2.image.ucar.edu/event/ci2013>



A glimpse at the next generation of TIES members? Photo taken after Banquet dinner in Anchorage, Alaska (at 10:30pm!). *A. Ali.*

6. Journal Publications

To celebrate the International Year of Statistics, Wiley has created an opportunity for statisticians around the globe to sample much of its statistics book and journal content. With free access to over 150 classic journal articles & book chapters, free trial

access to over 20 statistics journals (including Environmetrics) and free issues of *Significance* magazine to read on a mobile app, this is an opportunity that you may wish to take up. See:

www.wiley.com/go/iys.

Wiley also has a new statistics information hub,

www.statisticsviews.com,

which aims to bring statistics together with free access to exclusive feature articles, news items, details of forthcoming events, society details and much more. Throughout 2013 statisticsviews.com will be updated with news related to the International Year of Statistics.

The Editorial Board would like to encourage TIES members to volunteer for book reviews and to bring new publications to our attention.

7. TIES Board of Directors

The elected members of the TIES Board of Directors are:

President: Don Stevens
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President-Elect: Bronwyn Harch
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TIES Newsletter is a publication of The International Environmetrics Society (TIES). It is published semi-annually, or whenever the need arises by The International Environmetrics Society and distributed to TIES members as part of their annual dues. For questions regarding membership and other benefits, please contact Jorge Mateu at

secretary@environmetrics.org.

Objectives of the Newsletter include:

- to inform TIES members of happenings within the Society;
- to cover news in latest developments in theory and applications of environmetrics;
- to discuss of a broad range of issues which are of interest to members of TIES and are consistent with the objectives of the Society;
- to facilitate communication between environmental scientists and statisticians about research problems of mutual interest;
- to provide details about upcoming conferences and workshops related to Environmetrics;
- to announce members' news that are worthy of notice or recognition (e.g., awards, prizes and honours received, promotions, appointments, etc.).

Communications, (e.g. contributions, comments and suggestions) regarding this publication should be addressed to the TIES Newsletter editor: Ayesha Ali (aali@uoguelph.ca). As Editor, I would like to encourage TIES members to submit items for

publication in the Newsletter. I would like to thank the members who contributed to this issue.

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