



IGCP 565: Workshop Report and Other Outputs

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*Developing the Global Geodetic Observing System
into a Monitoring System for the Global Water Cycle*

IGCP 565 Workshop 3 Output



October 11-13, 2010, Reno: Separating hydrological and tectonic signals in geodetic observations

Objective:

Make progress towards improved applicability of geodetic observations for hydrological and global change studies

Anticipated output:

- * Recommendations for research/infrastructure
- * Workshop report on the Workshop Web page;
- * Summary articles in appropriate journals (including Episodes, EOS);
- * A special issue in an appropriate journal.

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IGCP 565 Workshop 3 Documentation



- All **presentations** linked from
 - program;
 - book of abstracts;
 - workshop report;
- videos of plenary presentations linked from program.

Recommendations for research/infrastructure:

- Should we have separate recommendations or integrated into a summary report?

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IGCP 565 Workshop 3 Documentation



Workshop Report on the Workshop Web page:

- input from all Session Co-Chairs requested;
- deadline for input: October 31, 2010;
- draft report available on November 10, 2010 - will link to presentations;
- comments and iteration in November.

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IGCP 565 Workshop 3 Summaries



Summary articles in appropriate journals (including Episodes, EOS):

- EOS: max. two months after the workshop; few authors
- Episodes (<http://www.episodes.co.in/>),
 - Journal of the International Union of Geosciences
 - longer summary (no specific page limit in the journal),
 - publication in December issue: deadline for submission:
Nov. 20, 2010.
- Others? Hydrology-related journals?

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Special issue in appropriate journal:

- (1) Water cycle, regional water management: gaps and needs
- (2) Tectonic signals in geodetic observations (secular, decadal, down to intraseasonal, global to local scales)
- (3) Hydrological signals in geodetic observations
- (4) Forward modeling/Error budget tectonics
- (5) Forward modeling/Error budget hydrology
- (6) Inversion, consistency,
- (7) Monitoring and modeling land water storage
- (8) Predictive capabilities
- (9) Decision support



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IGCP 565 Science Issues

- The development of an integrated dynamic model for the prediction of geodetic signals due to daily to interannual surface mass changes.
- Inversion algorithms for combined geodetic observations for surface mass changes.
- Integration/assimilation of the observations in integrated predictive models of the hydrological cycle.
- Development of products relevant for regional water management.

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IGCP 565 Workshops



Workshop 1: December 11, 2008, San Francisco: Science of geodetic monitoring of the hydrological cycle

Workshop 2: September 30-October 2, 2009, Graz, Austria: Toward a Roadmap for Future Satellite Gravity Missions

Workshop 2b: December 12-13, San Francisco, USA: From Satellite Gravity Observations to Products

Workshop 3: October 11-13, 2010, Reno, USA: Separating Hydrological and Tectonic Signals in Geodetic Observations

Workshop 4: 2011, Africa: Integration of geodetic observations and products in models of the hydrological cycle

Workshop 5: 2012, Africa: Improving regional water management in Africa on the basis of geodetic water cycle monitoring

GEO Water Cycle Community of Practice: Request for Training course/summer school in use of GRACE and other geodetic products for water management

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IGCP 565 Workshops



Workshop 4: 2011, Africa: Integration of geodetic observations and products in models of the hydrological cycle

Workshop 5: 2012, Africa: Improving regional water management in Africa on the basis of geodetic water cycle monitoring

Invitation to

- join the effort to organize the workshops;
- propose opportunities for co-locations

Noticing that

Declaration

one billion people are currently without sufficient access to clean drinking water;
*according to the 2nd UN Water Assessment Report, this deficit is a result of **governance problems** and poorly informed decision-making;*
***demand for water resources is rising** due to increased water usage for potable consumption, energy production, irrigation for agriculture purposes, industrial and urban uses, while climate change is locally to regionally impacting water resources through increased frequencies and magnitudes of droughts and floods;*
a better understanding of the water cycle on regional to global scales

■ Physical water scarcity

■ Economic water scarcity

Source: International Water Management Institute

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IGCP 565 Workshop 3



2010: Determination of mass transports in the hydrological cycle from geodetic observations

- Workshop will: focus on the inversion of geodetic observations for surface mass changes and the relation of these changes to parameters of the global water cycle.
- Key issues will be comparison of models and algorithms, cross-technique and cross-model validation, including meteorological and climatological models of the water cycle at regional and global scales.

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IGCP 565 Workshop 4



*2011: Integration of geodetic observations and products in models
of the hydrological cycle*

- Workshop will focus on algorithms for assimilation of geodetic observations and products into models of components (terrestrial, atmosphere, ocean) the global water cycle.
- Assess the improvements in terms of accuracy, spatial and temporal resolution, and predictive capabilities of the models.

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IGCP 565 Workshop 5



2012: Improving regional water management in Africa and Asia on the basis of geodetic water cycle monitoring

- Workshop will bring together representatives of regional water management authorities and representatives of the research and observation communities involved in the project activities.
- Assess the requirements of regional water management, in particular in developing countries, in terms of products derived from space-geodetic observations and the associated models.
- The goal is to define a set of products in terms of parameter, spatial and temporal resolution, accuracy, and latency, which can be made available in support of regional water management.

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IGCP 565 Research Projects



Current Projects:

- Surface Mass Loads from GRACE, GPS, and Earth Rotation Measurements. NASA, (Gross, Plag, Blewitt).
- Development and Evaluation of a California Water and Energy Model, CEC (Miller et al.).
- Environmental Geodesy: Variations of Sea Level and Water Storage in the Australian Region, Australia (Tregoning, Coleman, Featherstone, Rizos, Watson, Awange, Kuhn, Titov).
- TIVAGAM – Time-Variable Gravity and Surface Mass Processes: Validation, Processing and First Application of Satellite Gravity Data (Rothacher et al.).
- Sea Level, Gravity, and the Earth's Rotation (Gross, Song)