

Summary of Science and Observation Challenges

Hans-Peter Plag¹ & Norman Miller²

¹Nevada Bureau of Mines and Geology and Seismological Laboratory,
University of Nevada, Reno, NV, USA, hpplag@unr.edu.

²University of California, Berkeley

Summary of Science and Observation Challenges

Workshop showed very clearly:

- Geodesy has a great potential to support monitoring of the hydrological cycle
- Particular role in monitoring land water storage

Challenges in:

- Observations
- Data Analysis
- Forward Modeling
- Synthesis

There is a potential for Demonstration to decision makers

Observations

Bridging the spatial gap: reference frame to connect all observations in the same frame

Long records needed to separate tectonic and hydrology

Borehole geodesy

Validation of geodetic data against cumulative slip rates from geology

Encourage new technologies

Suitability of hydrological observations

Data access: Work with GEO; Water Cycle Community of Practice

Should we aim for a data portal for "Hydrological Geodesy"?

Data Analysis

Data processing:

- consistency in processing, modeling of processes (e.g., station motion)

Hydrology signals are not just seasonal. What would be the best parameterization?

Long-term hydrological signals are not secular: what are the consequences for data analysis

Combined analysis of different parameters
(displacements&gravity&hydrology, remote&in situ, ...)

Forward Modeling

Hydrological loading:

- global signal can be modeled to a large extent
- global mass balance is an issue
- remaining contribution due to local hydrology
- model errors: how good are the predictions?

Tectonics:

- explore different rheological models
- error budget

Synthesis (System Approach)

Clarify role of geodesy for hydrological modeling

Bridging the spatial scales:

(1) modeling framework, community model, ensure correct reference frame

(2) using the physics to "interpolate" between data points

(3) using physical models and data assimilation

Predictive capabilities:

- seasonal predictions: can geodetic observations improve predictive capabilities?

Should we develop a modeling framework of link to an existing framework?

Demonstration

Two main questions:

- Can we demonstrate the utility of geodesy in a test area (California)?
- Does the same approach work in Africa?

Pilot Project:

- can we bring together on-going activities in Africa to build a pilot project linking science to decision making in regional water management?
- Should have clear regional water management issues
- Projects/Groups: UN-Habitat at Lake Victoria, World-Bank/NASA/US-AID in Nile Basin; WaterNet, UNESCO/IHP, ...

Demonstration

Pilot Project:

- Projects/Groups: UN-Habitat at Lake Victoria, World-Bank/NASA/US-AID in Nile Basin; WaterNet, UNESCO/IHP, ...

Science contribution:

- Development of tools for end users;
- Advice for infrastructure planning;
- Capacity building for operational activities

Authorities/countries:

- data sharing,
- using the decision support for management

Home

The intergovernmental Group on Earth Observations (GEO) is implementing the Global Earth Observation System of Systems (GEOSS) and developing tools to help users better understand and apply earth observation data to a variety of societal areas. A suite of GEOSS Registries is at the core of these tools. These registries provide the means to register GEOSS components, services, data sets, and other relevant information resources. They are designed to enable users of Earth observations to access, list, search, and use the data and services available through GEOSS.

GEO is building GEOSS as a user driven system. The GEO User Requirements Registry (URR), which is part of the GEOSS Registries allows users to publish their needs in terms of Earth information, and it enables users and providers to analyze the value chains from Earth observations to end users. [Read More](#)

View the full [URR Brochure](#) (pdf)

You are invited to visit and search the URR for information related to user needs, applications, and observational requirements. If you have information on these items, you are invited to publish your information and thus enrich the URR.

If you intend to publish information in the URR it is strongly recommended that you first visit the URR Tutorials. In particular, the tutorial on the general concept of the URR is designed to introduce you to the type of information that should be published in the URR. It is also very helpful to scroll through one of the specific tutorials on publishing information. [Visit the URR Tutorials](#)


GEOSS depends on user feedback, and so does the URR. Give us your feedback by filling out the [Questionnaire](#).

Please Note: The URR is in development and subject to constant changes and service interruptions.

Applications

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Information for users and implementers

For information on individual fields, click on the information icon 

Application Definition

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Application name

early warning for malaria



Application description

Early warning for increased malaria risks and malaria outbreaks give information to health officials and the general public required to mitigate the risk, initiate treatment, etc. |



Entry Definition Status

Incomplete



Select all relevant societal sectors:

- Academic
- Commercial
- Educational
- Governmental
- Others
- Private



If "Others", please specify:

Association to Societal Benefit Areas (SBAs)


Select all relevant SBAs:

- Agriculture
- Biodiversity
- Climate

Requirements

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Requirements Definition

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Requirement name

humidity for malaria early warning 

Requirement description


Malaria outbreaks depend on humidity. Therefore, observed or predicted humidity are relevant inputs for determining the risk of malaria as a basis for early warning decision and actions in the frame of control programs. 

Entry Definition Status

Preliminary Draft 

Requirement Specification

Rate requirement quality on a scale from 0 to 5:

- 0 (unclear)
- 1 (user claim)
- 2 (estimate) 
- 3 (research results)
- 4 (sensitivity study)
- 5 (model simulations)

Requirement type:

Target 

Property:


relative humidity 

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Short name:


Long title:


Target Application/Problem Description:

Research activity:


Expected results:

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Link type:



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