http://www.prohimet.org

PROHIMET 2015
Latest activities, current situation and ongoing projects
Advices and proposals for similar projects

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PROHIMET
General overview

PROHIMET.- Iberoamerican network for the monitoring and forecasting of hydrometeorological phenomena

What is PROHIMET?

- PROHIMET is a thematic network for the Ibero American region. It brings together specialists in various disciplines with a particular interest in the problems of floods and droughts, as well as addressing climate change issues.

What are its objectives?

- Cooperation between meteorologists, hydrologists and other specialists
- Multinational cooperation
- Training
- Problem diagnosis
- Demonstration projects
- Development, extension and improvement of measurement and observation systems

What are its features?

- Multidisciplinary and multisectoral
- Network geared to individuals and institutions
- Members required to participate, contribute and share
- Exchanges leading to concrete solutions
- Forums organized to discuss specific, cross-cutting themes.

Forms of action

Actions

for the dissemination of knowledge

and the promotion of solutions

for the management

of hydrometeorological risks

Events

1. “International training course on the basic principles of monitoring and forecasting hydrometeorological phenomena”, Dominican Republic, 2005
2. “Iberoamerican workshop on flooding and natural disasters”, Perú, 2005
3. “Iberoamerican symposium on flooding and natural disasters”, Guatemala, 2006.
4. “Iberoamerican workshop on flooding and forecasting of hydrometeorological phenomena”, Argentina, 2006
5. “International symposium on flooding and landslide risk management”, Brazil, 2007
6. “Workshop on extreme hydrometeorological events: floods and droughts”, Chile, 2008
7. “Workshop on hydrometeorological forecasting and the problems of urban flooding”, El Salvador, 2009
8. Symposium on “Regional hydrometeorological observation systems. Exchange of information”, Costa Rica, 2010
9. Symposium on “The operation of hydrometeorological disaster prevention networks”, Mexico, 2011
10. Symposium on “Hydrometeorological challenges presented by potential climate variations and extreme events”, Dominican Republic, 2012
11. Symposium on “Early warning systems for hidrometeorological events”, México, 2013
12. Workshop on Information quality and hydrometeorological forecast, Costa Rica, 2015

Regional diagnosis based on PROHIMET experiences

Some points:

- "…the importance of implementing public education activities on flood risk and capacity building programs" (Argentina, 2006)
- "Shortcomings are detected in data collection, data management and international data interchanges." (El Salvador,2009)
- " … international regulation for instalation and operation of hydrometeorological measurement networks; issues related to manteinance, replacement and updating of measurement networks ; information disseminations and capacity building; cooperation at different territorial scopes, between governmental and productive sectors, and with monitoring, forecasting and prevention of hydrometeorological risks at local and regional systems. (Mexico, 2011)
- The measurement networks are not enough complete and precise, and the time series are not enough long to calculate trends in most part of the territory. Strenghtening of measurement networks is considered neccesary for collecting data that allow to make clear the causes of the possible hidrological changes, taking into account the most feasible climate scenarios. (Dominican Republic, 2012)

Summary of a general diagnosis in the region

Hydrometeorological monitoring and forecasting systems in Latin-America:

- Singularities
  - Large differences between countries
    - Natural, social, economical, political, …
- Lacks:
  - Training, education and capacity building
  - International cooperation
  - Inter-institutional coordination
  - Integral approach
  - Measurement networks
    - Investment
    - **Maintenance**
  - Institutional aspects
  - Legal framework (water laws, …)
- Strengths
  - Some interesting experiences
  - Some capable/expert groups
  - Educational and training advances
  - Networks and international projects

International thematic networks, like PROHIMET, are valuable actions to contribute to reduce the lacks in a region

Pilot Project
Demonstation cases

Projects. First call. 2006

- PROHIMET Yí project
  - Title: Flood early warning pilot project for the river Yí in the city of Durazno
  - Country: Uruguay
  - City: Durazno
  - River: Yí
- PROHIMET Colombia project
  - Title: Hydrometeorological system in the basins of the Nare and Guatape rivers in Antioquia, Colombia
  - Country: Colombia
  - Towns/cities: El Retiro, Guarne, Rionegro, La Ceja, Carmen de Viboral, Marinilla, Santuario, San Vicente, El Peñol, Guatapé and San Rafael.
  - Rivers: Nare and Guatapé

Projects.- Benefits and outcomes

- The pilot project are interesting as demonstration cases of approaches, methodologies and diagnosis.
- Several solutions to specific real problems are being tested.
- The interchange of knowledge and experience thanks to the discussion in the Internet forum and the activities of the different workgroups.
- Strengthening of institutional capacities, improvement of cooperation, and capacity building are important benefits at regional, national and local level.

Second call for proposals (2012)

- Call for proposals: Submission of projects, from to members of the network.
- Analysis of proposals: Viability and common interest.
- Project selection. The final decision is made by the coordinators, taking into account the above criteria and the results of the previous phase

Projects.- Orientation

- The goal of the network is to exchange experiences and to involve experts from various countries in the implementation of the pilot projects.
- The orientation is to develop, in phases, partial results that have to be presented to the network for discussion.
- Some specific tasks will be carried out by specialists from institutions other than those leading the project.
- **Presenting the final results is considered as equivalent to presenting a project developed by any organization on their own, so all the training value of the pilot project itself is loosing.**

Mexico 2013. Analysis and decisión

- Analysis
  - None of the proposed projects fulfilled completely the orientation
  - Several project didn't fitted to the basic requirements
- Decision
  - To start a period of reflection about the demonstration projects and the network
  - Pilot project "in standby"
- Main argument
  - The activities of the network have to be oriented to fill gaps
  - There are institutions or programs that support projects without the basic requirements of PROHIMET (see main definition of the network and orientations of the projects)
  - **To do something different or to concentrate efforts in other activities**

Ongoing activities

Last event and new action

- WMO 1072 (Manual on Flood Forecasting and Warning 2011) translated to Spanish
- Conference of Directors of Iberoamerican NMHSs (CIMHET, http://www.cimhet.org)
  - During the last meeting
    - Give support to PROHIMET
    - PROHIMET organizes a course on Hydrological Forecasting
- PROHIMET-CR-2015
  - Selection of workgroup for the course
  - Definition of the course
  - A parenthesis for the demonstration projects
    - Concentration of efforts
    - Each one has his/her own job

Organization of the course

- Orientation
- Main references
- Structure
  - Preparatory stage.- Students have to prepare material for later works
  - Previous evaluation of students
  - Attendance stage. 35 hours, 4 teachers, including practical exercises
  - Practical exercises guided on-line
  - Final evaluation
- Detailed table of contents
- Schedule
- Teachers
- Attendance Requirements

Lessons from the past

Main difficulties (experienced and expected)

- The requirements to PROHIMET's members are: to participate, contribute and share (participate in activities, provide feedback, analysis and solutions, and share knowledge and experiences).
- Possible difficulties
  - Not all the specialist are willing to share
  - People have to solve their own problems, so, to spend time and efforts on it.
- Possible solution
  - Selection
  - Stimulus
  - The leader has to be fair

Main difficulties (experienced and expected)

- Selection of members and participants
  - Fulfillment of the requirements
  - Objective and impartial criteria and decisions
- Possible difficulty (among others)
  - A Director of a National Service want to select a member of its staff, for a specific event or action, accordingly to an subjective and impartial criteria
- Possible solution
  - Dissemination of requirements and selection criteria
  - Committee of selection
  - Congruence, coherence

Main difficulties (experienced and expected)

- Financial issues
  - Projects
  - Events
  - Basic expenses
- Difficulties
  - Low investments or expenses are not attractive or interesting from a political point of view
  - Functional independence can imply lack of supports
- Possible solution
  - Different sources of funding

Main difficulties (experienced and expected)

- Enthusiasm, generosity, dedication (by members)
  - Actions require altruism
- Possible difficulties
  - Thinks can go worse or better, but cannot be steady (the world is moving)
  - Relaxation
  - “adquired rights”
- Possible solutions (I’m doing it)
  - Stimulous
    - Technology transfer, interchange of solutions
    - International visibility

Some ideas for PROHIMET and similar actions

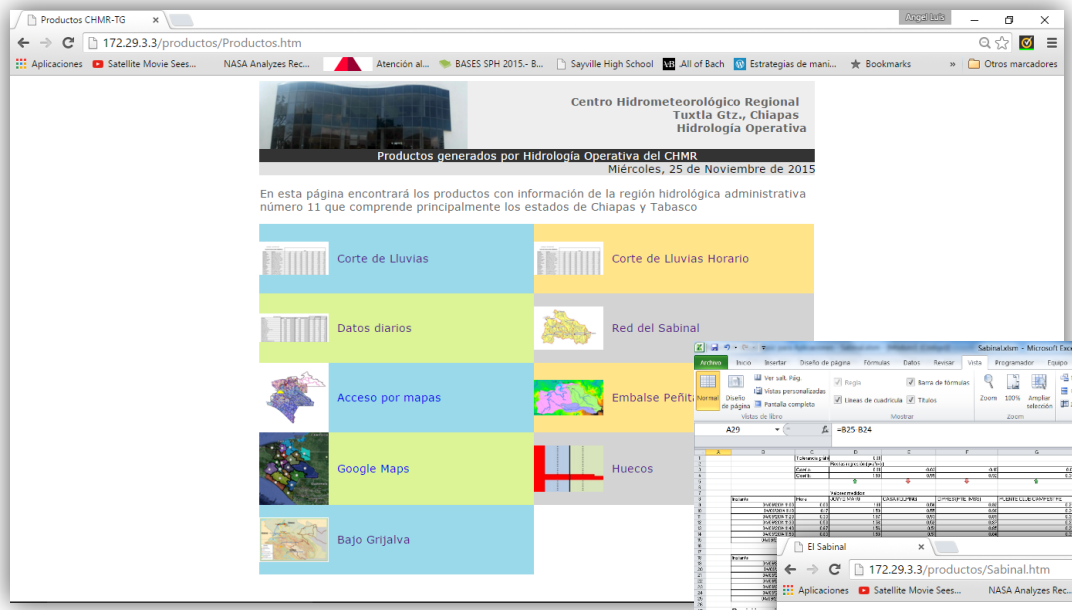
Some ideas to "export" PROHIMET experience to other regions

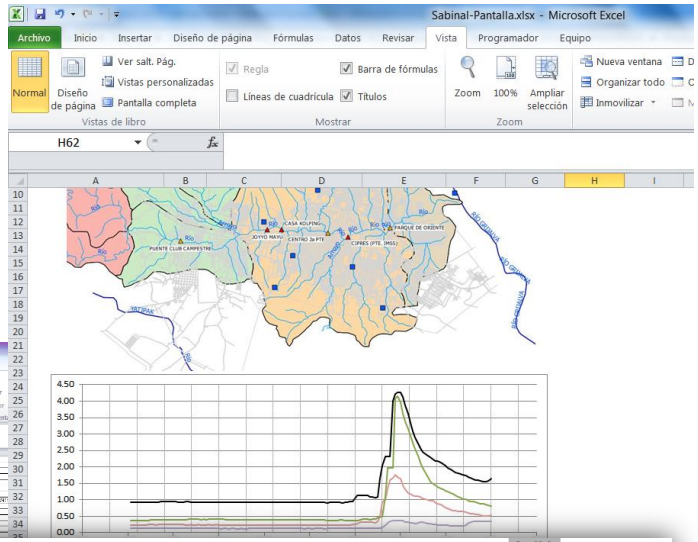
- Core team
  - Workshop, project, association
    - Example (PROHIMET): Ibero-American Workshop on Hydrometeorological Information and Forecasting Systems
- Funding and supports
  - Ibero-American Program on Science and Technology for Development (CYTED)
  - Conference of Directors of Iberoamerican NMHSs (CIMHET)
  - WMO
- Selection of a leader
  - Core team
- Relationships with other actions or initiatives
  - FFI
  - Training Program of CIMHET

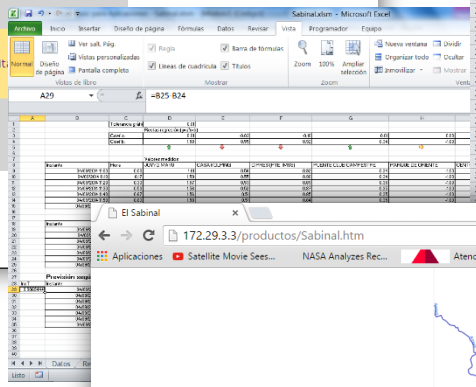
Some ideas. Possible future actions. A new stimulus

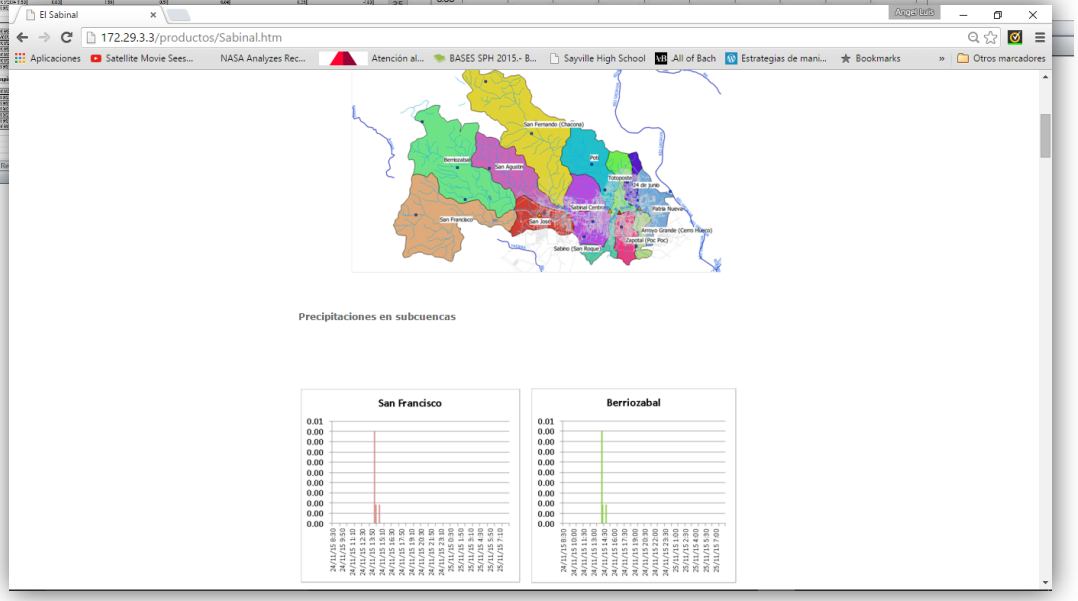
- Free software and codes
  - Example: Recent experiences in Mexico. Automatization of numerical forecast combining a database (SIH, similar to MCH), QGIS, MS-Excel and Hec software (HMS and DSSVue)
    - Flood forecasting models
    - Automatic generation of reports and other products for data disemination
- Sort guides
  - Specific common problems

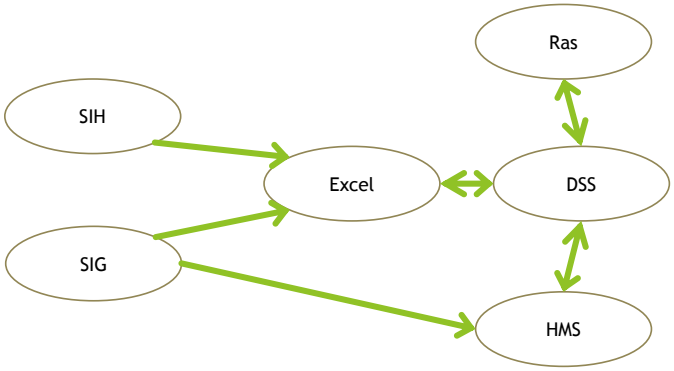
HTML examples, VBA code



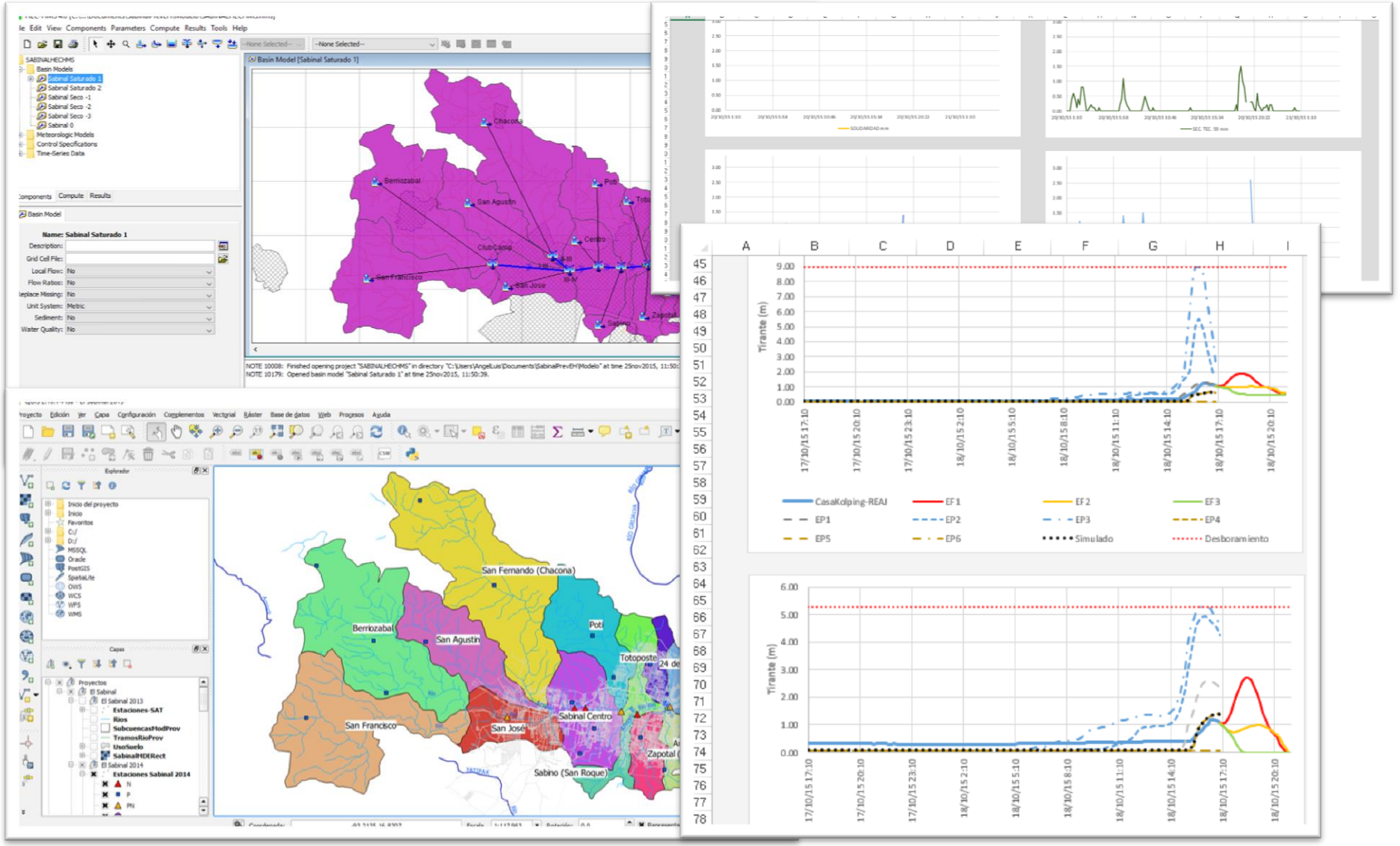








VBA codes


Basin Model [Sabinal Saturado 1]
Chacona
Berriozabal
San Agustin
Centro
Club Camp
San Francisco
San Jose
Zapotal
Sabino
NOTE 10008: Finished opening project "SABINALHECHMS" in directory "C:\Users\AngelLuis\Documents\SabinalPrevEH\Modelo" at time 25nov2015, 11:50:
NOTE 10179: Opened basin model "Sabinal Saturado 1" at time 25nov2015, 11:50:39.
San Fernando (Chacona)
Berriozabal
San Agustin
Totoposte
Sabinal Centro
San Francisco
San José
Zapotal
Sabino (San Roque)
Tirante (m)
CasaKolping-REAL
EF1
EF2
EF3
EP1
EP2
EP3
EP4
EP5
EP6
Simulado
Desbordamiento

FFI, H-M relationships and practical issues

Relationships between H and M

- Let`s start analyzing the differences

	Hydrology	**Meteorology**
Physical basis	• No constitutive equations • High empiricism • Solution are high dependent of characteristic of the site and the type of weather event	More overall solutions
Spatial scale	•Details of terrain are very important •Tens or hundreds of meters	•Es posible trabajar con representaciones del terreno con poco detalle •Cientos o miles de metros
Extent of models	Tens, hundreds, thousands square kilometers	Thousands square kilometers, global
Main parameters	Heterogeneity of terrain in three dimension has to be considered	Less dependent of the terrain
Main and fundamental variables	Most of them cannot be directly measured or they cannot be done with hight accuracy	Most of them can be
Response lead times and forecast lead times	Hours, days, weeks, months	Terms are well defined and they are global

Relationships H-M

- But also
  - Question asked by users
    - Dissemination, communication and public education
  - Operational customs / practices
  - Educational issues and problem solving
    - Engineers - physicist

Fields of common interest

- Evapotranspiration
- Soil moisture
- Snow
- Nowcasting
- Downscaling
- Precipitation
  - Hydrological applications of weather radar
  - Hydroestimators (satellite applications)
- Maintenance of stations
- Cost of investment and maintenance
  - Station
  - Software

FF and links with other actions

- Interest on specific results
  - Use of results of other actions: mapping, basic hydrological studies, risk analysis, …
    - How to use it?, how to take advantage of, …?
  - Measurement networks design, operation and maintenance
    - How can I improve the network?
  - Data interchange, formats, dissemination
    - What do I need to disseminate information? How can I do it?
  - Numerical solutions or method of calculus, working with uncertainties, …
    - I don’t know how to quantify this? Can you help me?
  - Fields of common interest
    - (previous slide)

Concluding and returning back to networks

Results and benefit of a network

- Demonstration cases
  - Approaches
  - Methodologies
  - Diagnosis
- Solution to **specific real problems** (by PROHIMET members)
- The interchange of knowledge and experiences
  - Internet forum
    - Discussion
    - Interchange of knowledge and experience
  - Workgroups/task groups
- Benefits at regional, national and local level:
  - Strengthening of institutional capacities
  - Improvement of cooperation
  - Capacity building
- Interesting platform for good diagnosis and, therefore, for an appropriate set of proposals for improvements in a region

Benefit of a network. Interest for the members

- Experiences
- Solution for specific problems
- Wider insight or understanding