4th HyMeX workshop introduction

P. Drobinski, V. Ducrocq, P. Lionello and the HyMeX ISSC
1. HyMeX objectives
2. HyMeX organization
3. Highlights of year 2010
4. Objectives of the workshop
HyMeX objectives
Motivations, societal stakes

The Mediterranean basin:
A nearly enclosed sea surrounded by very urbanized littorals and mountains from which numerous rivers originate.

⇒ A unique highly coupled system (Ocean-Atmosphere-Continent)
⇒ A region prone to high-impact events related to water cycle:
  ➔ Heavy precipitation, flash-flooding during fall
  ➔ Severe cyclogenesis, strong winds, large swell during winters
  ➔ Droughts, heat waves, forest fires during summers
⇒ Water resources: a critical issue
  ➔ Freshwater is rare and unevenly distributed in a situation of increasing water demands and climate change (180 millions people face water scarcity)
⇒ The Mediterranean is one of the two main hot spot regions of the climate change

⇒ Need to advance our knowledge on processes related to water cycle within all Earth compartments, to progress in the predictability of high-impact weather events and their evolution with global change.
to improve our understanding of the *water cycle*, with emphases on the *predictability* and *evolution* of *intense events*  

- by monitoring and modelling:  
  the Mediterranean *coupled system* (atmosphere-land-ocean), its *variability*  
  (from the event scale, to the seasonal and interannual scales) and  
  characteristics over *one decade (2010-2020)* in the context of global change

- to evaluate the *societal* and *economical vulnerability* to extreme events and the *adaptation capacity*. 

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**HyMeX objectives**

*Scientific topics*
HyMeX objectives

Implementation strategy

- « Nested » approach necessary to tackle the whole range of processes and interactions and estimate budgets

Enhanced existing observatories and operational observing systems in the target areas of high-impact events: budgets and process studies

(+ dedicated short field campaigns)

Current operational observing system and observatories over the whole Mediterranean basin: budgets

(data access)

Special observing periods of high-impact events in selected regions of the EOP target areas (aircraft, R/V, balloons, ...): process studies


2010 SOP EOP LOP 2020
HyMeX objectives

Implementation strategy

--- Target Areas of the first EOP/SOP series

- Hydrometeorological sites
- Key regions for dense water formation and ocean convection

NW Med TA

SE Med TA

Adriatic TA
HyMeX objectives

Implementation strategy

Target Areas of the first EOP/SOP series

---

Hydrometeorological sites

Key regions for dense water formation and ocean convection

NW Med TA

SOP1 in order to document:
- Heavy precipitation and Flash-flooding
- Ocean state prior the formation of dense water

SOP2 in order to document:
- Dense Water Formation and Ocean convection
- Cyclogenesis and local winds

Sept. 2011

EOP

SOP1.1

SOP2.1

SOP1.2

SOP2.2


Mar. Apr. 2013


Mar. Apr. 2014

Mar. 2015
HyMeX objectives

Implementation strategy

AdriaticTA

--- Target Areas of the first EOP/SOP series
- Hydrometeorological sites
- Key regions for dense water formation and ocean convection

SOP1 in order to document:
- Heavy precipitation and Flash-flooding
- Ocean state prior the formation of dense water

SOP2 in order to document:
- Generation and spreading of the newly formed dense water
- Severe winds (Bora) and cyclogenesis

Sept. 2011

EOP

SOP1.1

SOP2.1
Feb. April 2013

SOP1.2

SOP2.2
Feb. April 2014
HyMeX objectives

Implementation strategy

--- Target Areas of the first EOP/SOP series
- Hydrometeorological sites
- Key regions for dense water formation and ocean convection

SOP1 in order to document:
- Heavy precipitation and Flash-flooding
- Ocean state prior the formation of dense water

SOP2 in order to document:
- generation and spreading of the newly formed dense water
- severe winds

Sept. 2011

EOP

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<th>SOP2.1</th>
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HyMeX organization
Main Phases and associated documents

Phase 1
- 2006: White Book
- 2008: June 2008 2nd HyMeX Workshop

Phase 2
- 2008: International Science Plan (ISP)
- 2009: June 2009 3rd HyMeX Workshop
- 2010: Sept. 2010 HyMeX Operations

We are here

HyMeX Preparation

International Implementation Plan (IIP)

HyMeX Operations
HyMeX organization

Structure

International Governing Board (IGB)  Coordination Implementation

International Scientific Steering Committee (ISSC)  Coordination Science

Executive Committee for Implementation and Science Coordination (EC-ISc)

Scientific Working Groups (WG)

International Science Plan

HyMeX

Chair: P. Lionello
Vice-chair: P. Drobinski

Chair: V. Ducrocq

Odile Roussot
Laurent Labatut

Project Office (PO)
Links with :

- The World Weather Research Program (WWRP) of the World Meteorological Organization (WMO)
  - HyMeX is endorsed by the WWRP Joint Scientific Committee and the WWRP/THORPEX program

- The World Climate Research Program (WCRP) of WMO
  - Preparatory work (selection of sites and preparation of data) for HyMeX being a Regional Hydrological Project of GEWEX/CEOP
  - The HyMeX MED-CORDEX regional climate activities are included in WCRP/CORDEX

- ESF/MEDCLIVAR
  - Joint workshops (within 3rd HyMeX workshop and Plinius conference)

- MISTRALS (Mediterranean Integrated Studies at Regional And Local Scales)
  - In France, HyMeX is inserted in a program cluster (MISTRALS) about the monitoring and evolution of the habitability in Mediterranean (sponsors: CNRS/INSU, Météo-France, INRA, CNES).
  - Other MISTRALS programs: Charmex, Mermex, Termex, Sicmed, Paleomex, Biodivmex
HyMeX highlights 2010

Organisation and Program documents

- **International Science Plan (ISP)**
  Draft 2.1 reviewed by the ISSC, WG comments on draft 2.2
  Version 2.3 of the HyMeX Science Plan released and public available

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- *presentations of the science Working Groups this morning*
- Comments are welcome, to be sent to hymex@cnrm.meteo.fr

**Next version**, updated with the Workshop outcomes about the program strategy, should be prepared for **September 2010**
Set-up of the Task Teams for the implementation of the program

**Task Teams for Observations (TTO)**
- TTO1 - Sounding of the atmosphere
- TTO2 - Hydrological and soil measurements
- TTO3 - Measuring surface fluxes over land
- TTO4 - Sounding the ocean
- TTO5 - Measuring air-sea fluxes
- TTO6 - Measuring land-sea fluxes
- TTO7 - Monitoring vulnerability factors

**Task Teams for Modelling platforms (TTM)**
- TTM1 - High-resolution (coupled-ensemble) modelling platforms for intense
- TTM2 - Multiscale modelling of the continental surfaces
- TTM3 - Regional Climate model (Atmosphere-Ocean-Land)
- TTM4 - Data assimilation

**Transversal Tasks (TS) in support to TTO and TTM**
- TS1 – Data base
- TS2 - Satellite products
- TS3 - Hydrometeorological sites and HO
- TS4 – atmospheric supersites and sites
- TS5 - Aircraft operations
- TS6 – Ocean operations
- TS7 – real time modelling forecast during EOP/SOP
- TS8- SOP Operation coordination

First draft of IIP available for about half of Task Teams
Second draft based on Workshop discussions for September 2010
Beginning of HyMeX LOP: September 2010

- **Metadatabase and database set-up, incl**
  Drafting of a data policy,
  Development of the data catalog software
  Progressive feeding with in-situ observations from operational networks, satellite and model metadata and data

- **Facilitated access to « operational » data**
  North-African GPS data

- **Enhancement of long-term observations**
  - Enhancement of instrumentation over hydrological super-sites and pilot-sites,
  - Glider transects (within MOOSE observatory),
  - Ferry lines equipped for ocean and atmosphere measurements (SOOP), already one equipped for surface ocean measurements
  - Etc…

- **Modelling and monitoring of the water cycle long-term evolution**
  Regional climate modelling (partly in relation MED-CORDEX)
Objectives of the 4th workshop

✓ Already three international workshops have been organized in 2007 (Toulouse), 2008 (Palaiseau) and 2009 (Heraklion) for elaborating the HyMeX program.

→ 4th HyMeX Workshop in Bologna, Italy, 8-10 June 2010.
Objectives of the 4th workshop

- to present and discuss the most recent scientific progresses concerning the Mediterranean hydrological cycle (first « scientific conference » format of the HyMeX workshop)
  
  *More than 30 oral presentations and about 100 posters*

- to broadly discuss the International Implementation Plan and to coordinate at the international level the planning of the future observation and modelling operations,
  
  - *Presentation of the « background »*: Scientific questions and program strategy of each WG
  
  - *9 parallel working meetings:*
    - Long-term observations (LOP-EOP): **PW1.1** (Long-term ocean observations), **PW1.2** (Long-term hydrometeorological observations)
    - Instrument deployment design over the TAs during SOP/EOP: **PW2.1** (mobile atmospheric platforms), **PW2.2** (ocean and air-sea fluxes), **PW3.3** (in-situ networks, sites and supersites)
    - Modelling: **PW2.3** (continental surfaces), **PW3.1** (Regional climate modelling), **PW3.2** (High-resolution modelling)
    - Societal and economical impacts (science objectives and implementation plan): **PW1.3**

⇒ Progress in the definition of the implementation plan, in the cross-cutting activities and in the integration between the different TA’s for the LOP (beginning in fall 2010), EOP (beginning in fall 2011) and SOP (beginning in fall 2012)
Thank you to our Italian colleagues for organizing the 4th international HyMeX workshop here...

⭐

... and enjoy Bologna, *la Dotta* and *e la Grassa*!°

* the western world's most ancient university
° the rich local traditional cuisine (Tagliatelle al ragù, lasagne, tortellini, prosciutto, mortadella, salame…)

la Dotta°