



First TEAMx Workshop, Rovereto, 28-30 August 2019

Wrap up

#### Hosting Institutions



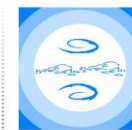
UNIVERSITY  
OF TRENTO - Italy



#### Funding Institutions



IUGG



International Association of Meteorology  
and Atmospheric Sciences

IAMAS



# ,Program' for wrap up session

## Summary of Workshop results

- Changes to WP
- Numerical modelling plans
- Joint experiment (JE)

## How to get involved

- International embedding
- projects
- collaboration
- time line

# Summary of Workshop results

- Changes to WP
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# Summary of Workshop results

## Discussion A: ***Air chemistry and atmospheric dispersion modelling***

- Stratosphere – troposphere exchange
  - also for mass (not only momentum)
- Sub-grid scale parameterization for pollutants
- Air pollution in mountainous terrain
- More chemistry related aspects
  
- Observations:
  - flying chemistry lab
  - spatially distributed measurements
  - mountain top observations

# Summary of Workshop results

## Discussion B: *Climate processes / climate change in mountains*

- Processes behind EDW (elevation dependent climate change)
- Whatever improves (models) will be beneficiary for climate
  - Slowly reacting components in models (soil, lakes, glaciers & snow, ...), BL representation, Diagnostics of 2m T, 10 m Wind, Representation of 3D radiation (all: 'right for the right reason')
- Multi-variate context for evaluation (and multi-variate extremes)
- Reanalysis
- Focus on operations-to-research: demands that cannot be addressed
  - Services. Urban climate, Föhn, ..
- No ,history of Mountain Climate projects' → propose CORDEX FPS on mountain climate?

# Summary of Workshop results

## Discussion C: ***Orographic convection***

- WP:
  - more focus on triggering,
  - Distinguish between primary and secondary triggering
  - interaction with Marine BL (e.g. Mediterranean), and lakes of course, other 'breezes'
  - expand extent of impact (Po Valley is part of Mountains...)
- Needs:
  - Target areas: hotspots identified (Climatology, as in A, CH, I)
  - good polarimetric coverage
- numerical experimentation:
  - more focus on idealized studies: obs vs model climatology of init locations  
(*preparatory*)

# Summary of Workshop results

## Discussion D: ***Orographic flow dynamics***

- WP: relevant topics are there
  - BUT: all is based on numerical models ...
  - need high-resolution observations (process studies, verification, ..)
- Additional topics beyond WP1.0
  - impact of flows within MoBL on the onset of *downslope winds*
  - Mountain venting
  - *Predictability* of ct-flows
  - TS exchange, related to GW braking, e.g. related to GWB around tropopause
- Obs approaches:
  - coordinated airborne and ground obs
  - use of tracers water vapor/ carbon isotopes

# Summary of Workshop results

## Discussion E: **Land atmosphere exchange**

- Surface heterogeneity
  - 'logarithmic' arrangement of sites
  - advection
- Modelling issues (...theory)
  - generalised similarity (,beyond MOST')
  - scale-aware parameterisations
- Reference (null hypothesis)?
  - EB as a criterion (?)
- Obs approaches:
  - post-processing issues
  - reference to other studies (Perdigao...)
  - not only summer (glaciers, snow, ...)



# Summary of Workshop results

## Discussion F: **Mountain Boundary Layer Flows**

WP: missing

- interaction between mountain-induced circulations and other meso-scale motions
- obs: airborne remote sensing platforms; synergy between remotely sensed and in situ measurements
- Processes:
  - sources of turbulence (local vs non-local). Presence of elevated (decoupled) layers.
  - role entrainment in ct (often no direct interface between CBL and free atmosphere)
- Field experiment
  - link to moisture transport ('sufficient moisture')
- Modeling:
  - intermediate step between LES and RANS (GABLS-ct) semi-idealized;  $\mu$ -physics
  - concentrate on studies/processes with practical relevance (e.g. fog, snowline).

# Summary of Workshop results

## Discussion G: **Strategy for field experiment**

... A lot of input

→ we didn't arrive at shaping the experiment

→ but collected a large number of constraints and suggestions

➤ One of the next tasks

→ shape the 'back bone'

→ secure infrastructure resources (airborne obs) with long lead times

# How to get involved

- International embedding
- projects
- collaboration
- time line

# International embedding

## Relation to WMO bodies

- WCRP: GEWEX Hydroclimate Panel – GHP
  - co-chairs: Jason Evans, Joan Cuxart
  - plans to apply for status of GHP Cross Cut Project

# Cross-cut Projects - Objectives

- Target GEWEX science questions
- Tackle issues best addressed through large collaborative projects
- Should test and evaluate applications of the knowledge produced in RHPs.
- Generate interactions between RHPs and keep completed RHPs involved
- CC projects are also a tool for collaboration with other GEWEX panels and WCRP projects.
- A way for the broader Community to get involved in GEWEX/GHP.

## Currently active

- INTENSE (Sub-daily precipitation) (H. Fowler)
- Cold/Shoulder Season Precipitation Near 0°C, (R. Stewart / P. Groisman)
- INARCH (Mountain Hydrology) (J. Pomeroy)

## In exploration

- Including water management in large scale models (R. Harding / J. Polcher)
- Determining Evapotranspiration (workshop in Sydney Oct 2019)

## Potential

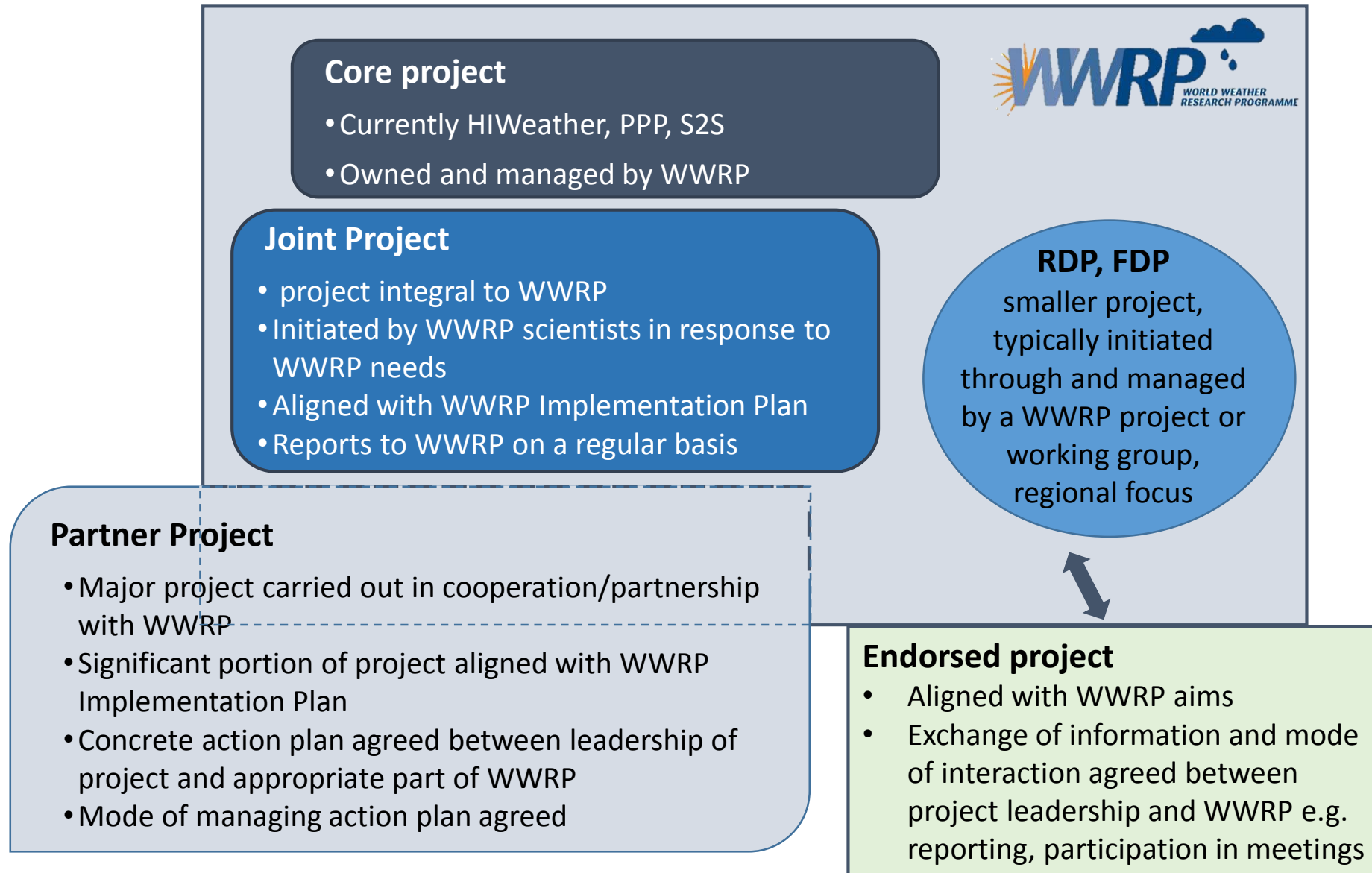
- GDAP integrated product regional evaluation
- MOUNTerrain (Mountainous Terrain rainfall)

# International embedding

## Relation to WMO bodies

- WCRP: GEWEX Hydroclimate Panel – GHP
  - co-chairs: Jason Evans, Joan Cuxart
  - plans to apply for status of GHP Cross Cut Project
- WWRP: new structure and project types
  - chair: Sarah Jones
  - Core Projects, Joint Projects (RDPs, FDPs), Partner Projects, Endorsed Projects

# Five types of Projects for WWRP



All projects give appropriate credit to WWRP in their activities; flexibility needed in managing links to fit with requirements of funding agencies / project structure

# International embedding

## Relation to WMO bodies

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- WWRP: new structure and project types
  - chair: Sarah Jones
  - Core Projects, Joint Projects (RDPs, FDPs), Partner Projects, Endorsed Projects
- WMO High Mountain Summit
  - TEAMx involvement in HMS ‘white paper’
  - “mountain areas are not only underobserved, but also under-understood”
  - 29-31 October, Geneva



# International embedding

Relation to other bodies

- MRI???
- COST action on BL height

# TEAMx funding

- Funding opportunities

# Funding opportunities

- TEAMx is **bottom-up financed**
  - no 'big pot of money'
  - *your project* – if it conforms to the scientific goals of TEAMx – contributes to the scientific achievements of TEAMx
- Projects can be stand-alone projects / bi- (multi) lateral / programmes
- CIG / PCO supports coordination / initiation of new collaborative projects



# Current projects

## ➤ **Stand alone**

Bianca Adler et al: CROSSIN

→ DFG

→ 'KIT cube meets i-Box'

→ spatial structure of valley atmosphere

## ➤ **Multi-lateral** (UIBK / U Trento / Free U Bolzano)

Manuela Lehner et al: ASTER

→ EUREGIO

→ Atmospheric Boundary Layer Modeling over complex terrain



# Potential projects

## ➤ **Stand alone**

- hopefully many ...
- national funding agencies / ERC / other
- Experimental infrastructure resources (e.g. KIT)

## ➤ **Bi-lateral**

- specific schemes (e.g., A-F bilateral agreements)

## ➤ **Multi-lateral**

- schemes like EUREGIO / DACH
- large collaborative infrastructure resources (e.g., NCAS, NCAR)
- H2020, e.g. ITN (Marie-Sklodowska Curie doctoral network)
- US schemes, ..

# Potential projects

## ➤ PCO

- has put together list of funding opportunities in different countries
- different schemes, constraints, etc.
- exists (so far) for A / CA / CH / DE / ES / UK

# Potential projects - concrete plans

## ➤ **Stand alone**

- hopefully many individual projects (some pending)
- experimental infrastructure resources: KIT cube; i-Box, ...
- DOE /ARM facility

## ➤ **Bi-lateral**

- French-Austrian collaborative project (MF - ACINN): tentative topic CAP-air pollution; experimental

## ➤ **Multi-lateral**

- ITN: topics advances in 'operational' NWP; so far: TPCO sponsors were 'invited'
- ...

# TEAMx project?

- Since bottom-up financed
  - you decide .....
  - if you can profit from the collaboration (e.g., in joint experiments: tons of other measurements; e.g., in joint modelling approaches: comparability)
- *To help in application process*
  - Support letter by PCO
  - not only 'letter of enthusiasm'. TEAMx also grants 'access to all TEAMx resources' (data, etc.)
  - this requires conformity to TEAMx scientific objectives
  - TEAMx projects share data with other TEAMx projects (clearly, 'your PhD student' can first explore her/his topic ....)



# TEAMx Organisation & Collaboration

How to get involved?

As an institution

- sign the MoU
- discuss internally your interests
- plan / submit projects

# TEAMx Organisation & Collaboration

How to get involved?

As an individual

- plan / submit projects
- Liaise to other (international) activities
  - e.g., if you happen to be in a WMO body....
  - e.g., COST action
  - e.g., CORDEX FPS
  - bring TEAMx topic to that body – help making TEAMx aware of that body's output
- participate in a working group

# Working groups

Do we need them? What is their purpose?

- all aspects of 'why a joint programme?'
  - experimental groups cannot 'cover it all alone'
  - joint preparations (e.g., agree on post-processing options, design scanning strategies, flight patterns, ...)
  - modelling: agree on common 'programme' (like CORDEX, GABLS-ct)
  - cover parameter space
- discuss / sharpen project ideas
- find project partners
- 'contact point' within TEAMx for particular issues

# Next steps

- You sign up for being kept informed  
→ use your address?
- See above: ways of getting involved  
→ in particular: interest to collaborate in a WG...
- Newsletter...
- WP2.0

# TEAMx tentative time line (T<sup>3</sup>L)

necessary steps	by when	who
Establishment of WGs	asap.... end 2019	all, ClG approves
Establishment of TJE* team	asap.... end 2019	
Explore possibilities to join / contribute	End 2019	All (individuals & institutions)
Set up TEAMx newsletter	12/2019	PCO
...use newsletter		all
Make time planning (when to apply to contribute to TJE)		

\* TEAMx Joint Experiment

# TEAMx tentative time line (T<sup>3</sup>L)

.....Towards an intensive field campaign in 2023 ....

