

INTERNATIONAL CONFERENCE ON
MOUNTAINS AND CLIMATE CHANGE

An overview of the EU/FP7 “ACQWA” Project

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Assessing Climate impacts on the Quantity and quality of Water



MODELS

Climate

Glaciers

Snow

Biosphere

Hydrology

EUROPEAN CASE STUDIES

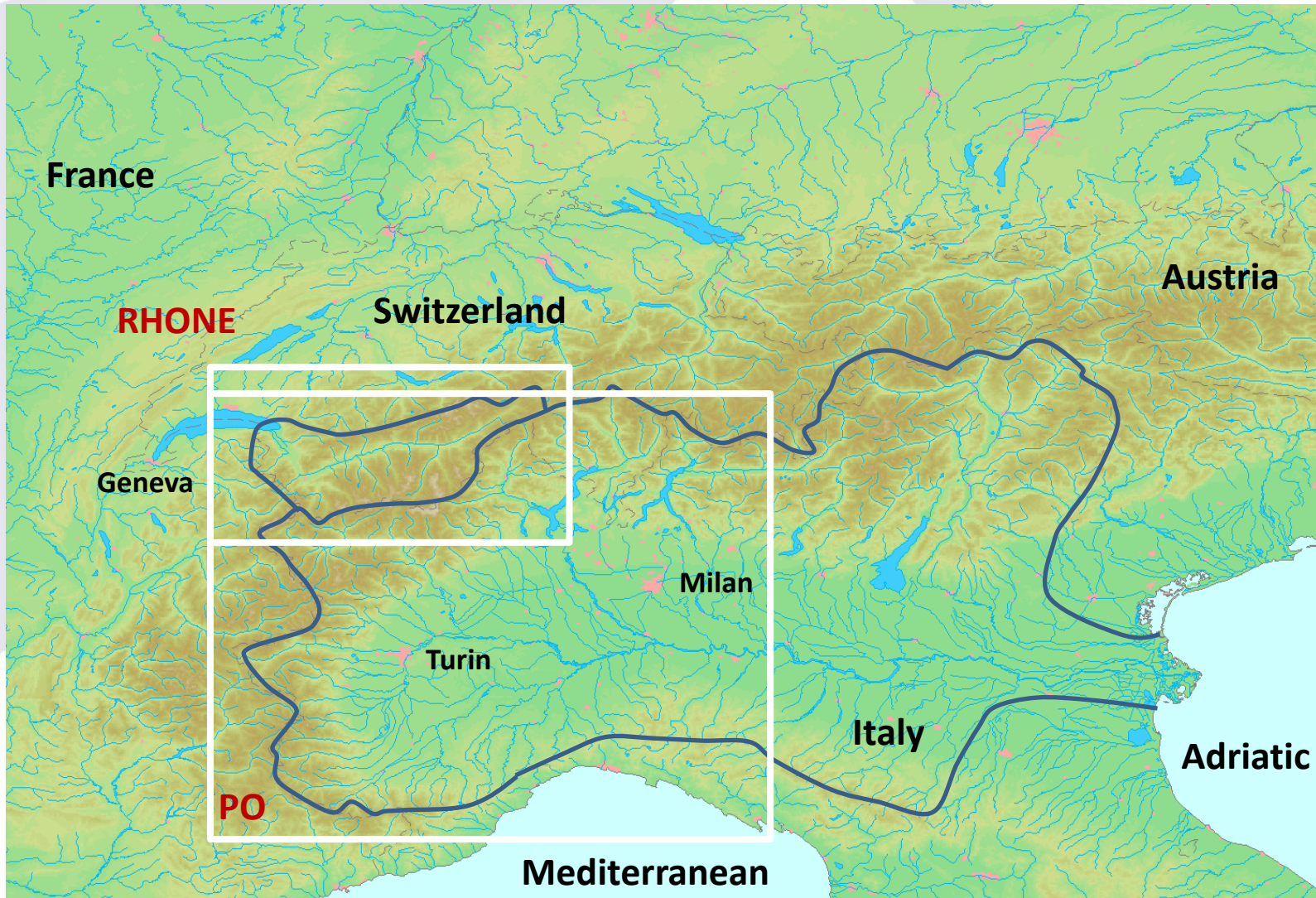
Rhone, Switzerland

Po, Italy

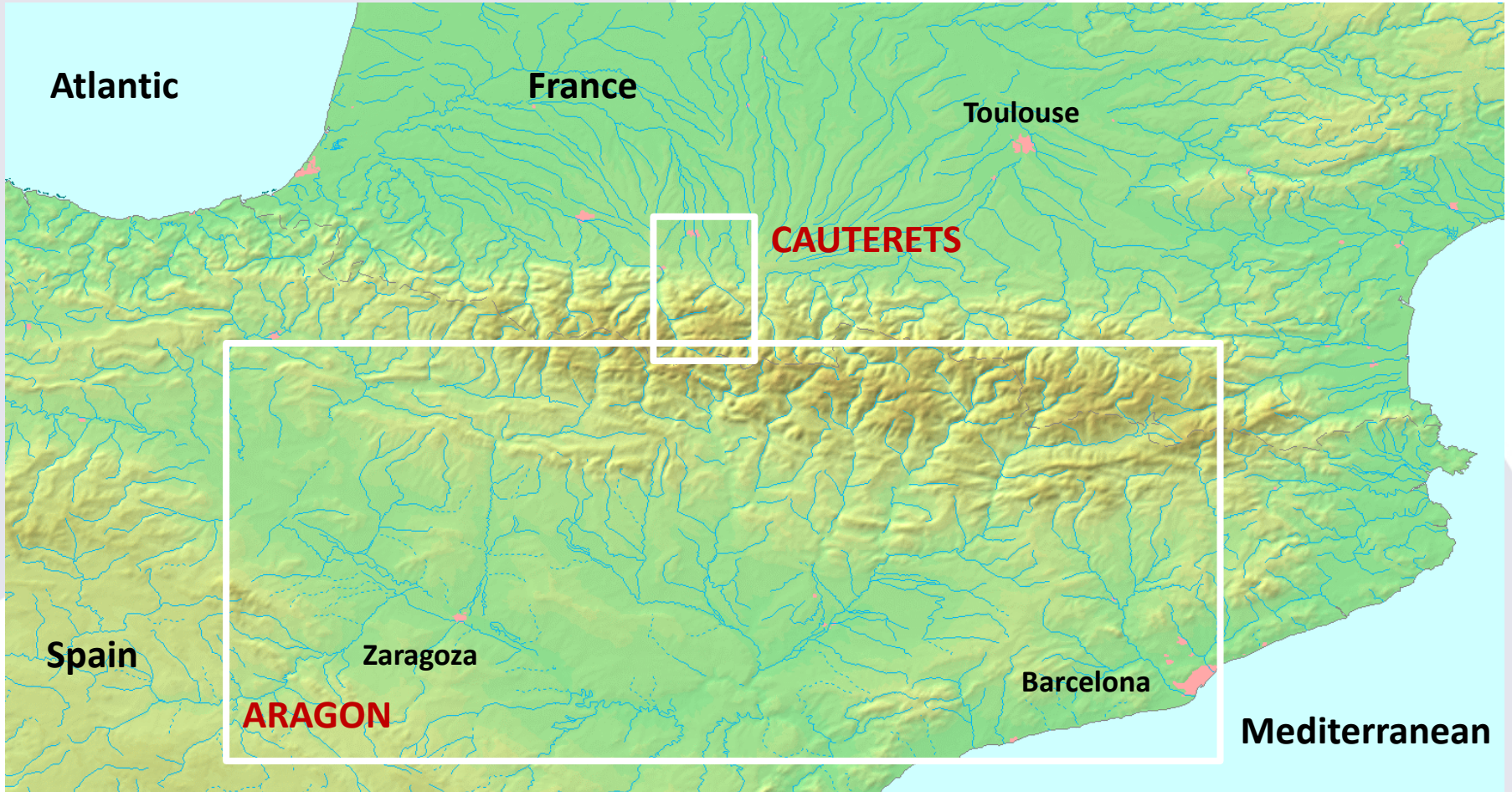
Aragón, Spain

Pyrenean catchments, France

Rhone and Po catchments



Aragon catchment (Spain), Cauterets region (France)



MODELS

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Biosphere

Hydrology

EUROPEAN CASE STUDIES

Rhone, Switzerland

Po, Italy

Aragón, Spain

Pyrenean catchments, France

NON EUROPEAN CASE STUDIES

Aconcagua, Chile

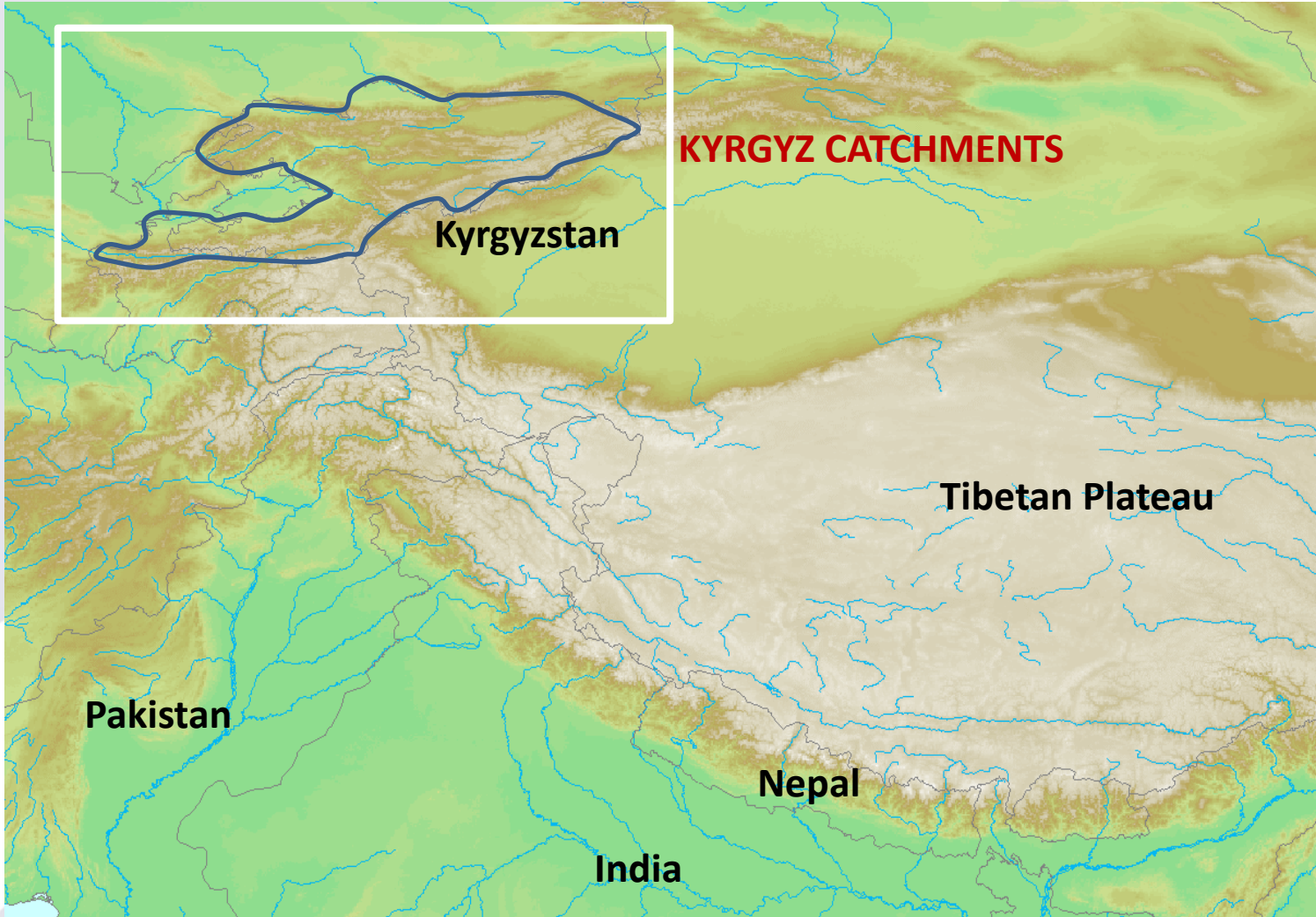
Cuyo, Argentina

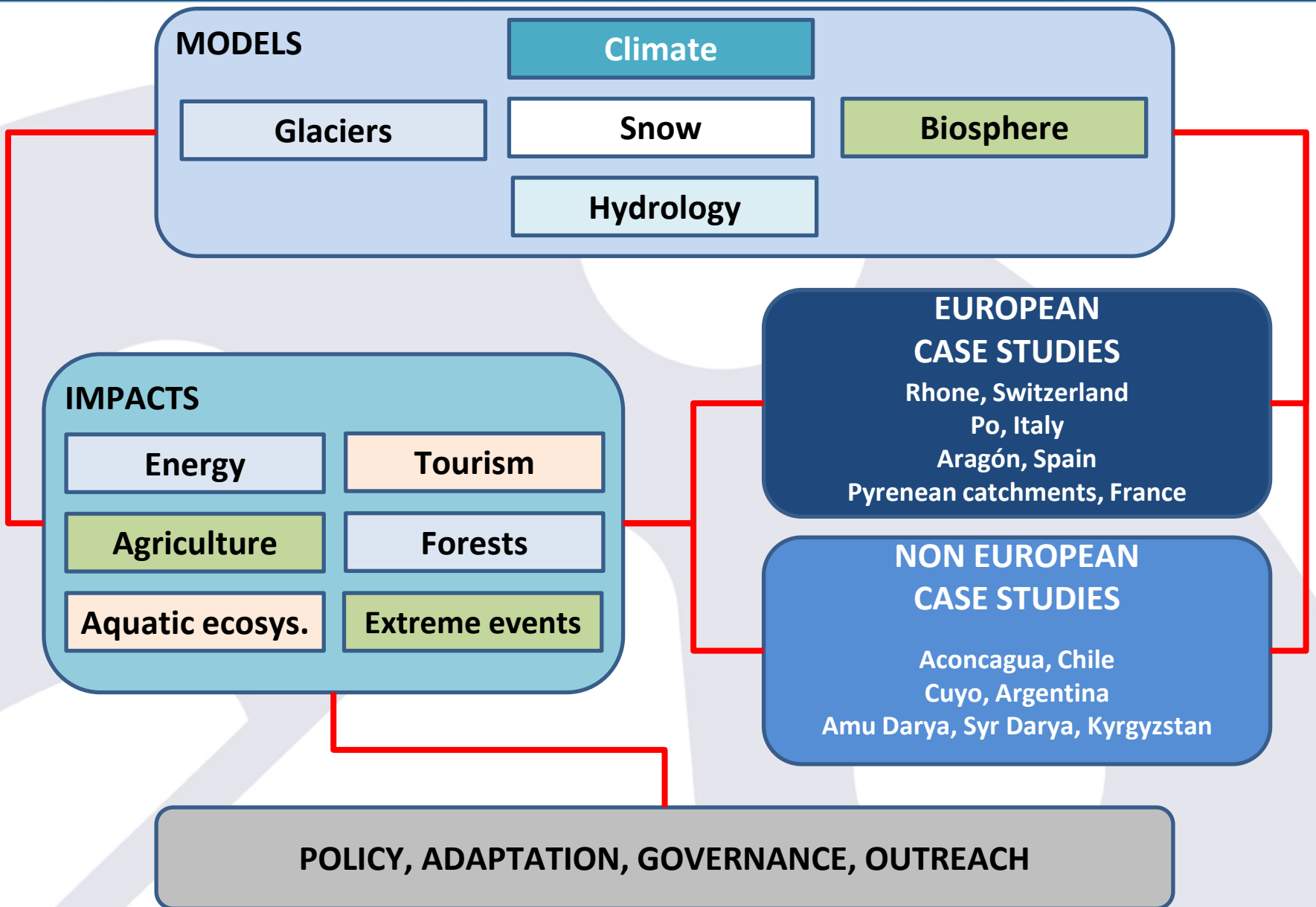
Amu Darya, Syr Darya, Kyrgyzstan



agua catchment

Syr Darya, Amu Darya catchments





Alpine climate change

- 2°C warming projected by 2050, most prominent above 1500m in autumn.
- Precipitation is likely to increase in winter and decrease in spring and summer.
- High spatial variability is likely for precipitation with increases in the north of the Alps, and decreases in southern parts.
- Decrease in snow depth is projected to be most visible in winter and spring.

Hydrology

- The effects of climate change on the hydrological cycle appear less evident in the higher part of the alpine region (e.g., upper Rhone) than for lower elevations (e.g., the Padan Plain, Po).
- Projections for mountain tributaries of the Po River exhibit general increases in both low and high flows.
- Decrease in discharge is estimated to be more than 50% of the seasonal average for a large portion of the drainage network.
- Changes in natural hydrological regimes imposed by existing hydraulic infrastructure are larger than the climate change signals expected by 2050.

Lessons learned from non-European regions

- These regional studies have illustrated the challenges of climate change impacts in basins characterised by less robust institutions and lower levels of climate data.
- Comparisons of water governance assessment across non-European and European basins underline the importance of enhancing institutional strength to better adapt to increased periods of summer drought in particular.
- Improved monitoring of ecosystem and water rights, and improved conflict resolution mechanisms are recommended to enhance the adaptive capacity of these systems.



Many thanks for your attention

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www.unige.ch/climate

www.acqwa.ch