



World Meteorological Organization

Weather • Climate • Water

The quiet revolution of numerical weather prediction*

Paolo Ruti,
World Weather Research Programme, WMO



*Peter Bauer, Gilbert Brunet, Alan Thorpe, Nature 2015

Weather • Climate • Water



Should I bring an umbrella tomorrow?





Questions like these are answered quite sufficiently today





But what happens with questions like these



How to plan next 10-day traffic in Shanghai when a tropical cyclone is approaching?

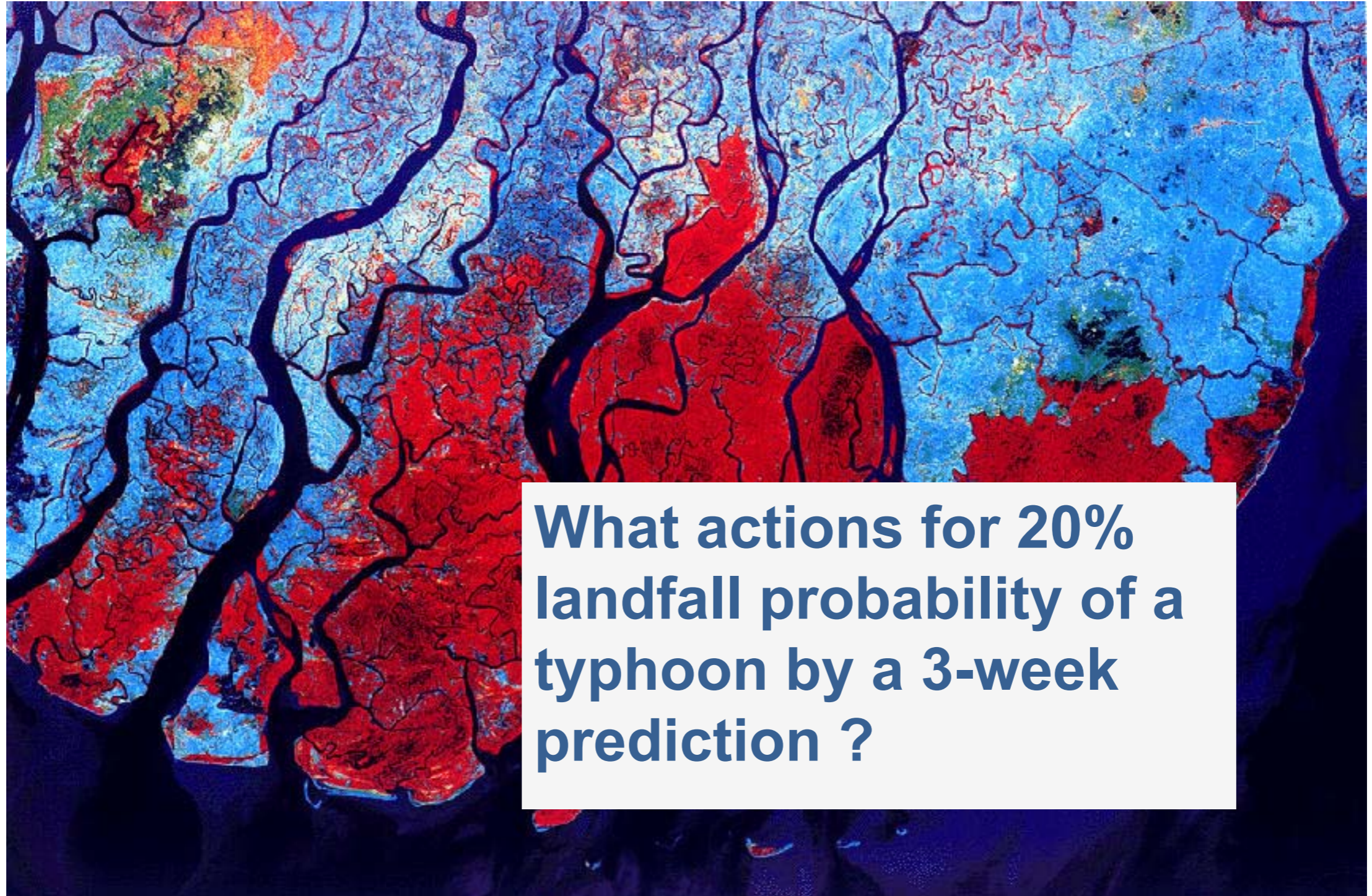
How to plan hazards-free cities ?

© Zhou YanranZhou





But what happens with questions like these



What actions for 20% landfall probability of a typhoon by a 3-week prediction ?





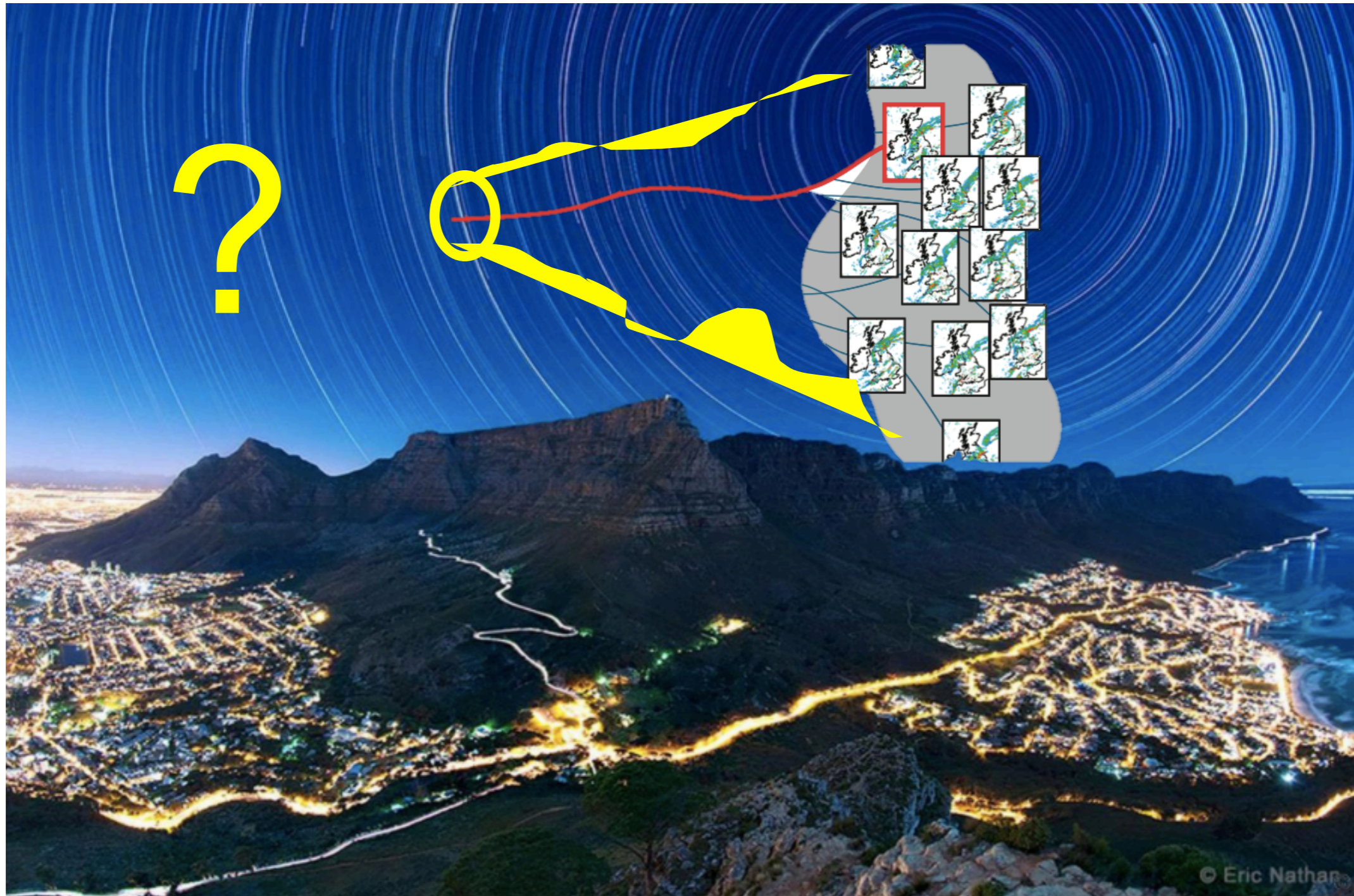
But what happens with questions like these

What health protocol should we run to be prepared for the next sand and dust storm?





How to shape the met-future?





Some food for thought

An abstract, colorful background with swirling patterns in shades of blue, red, and orange, resembling a satellite image or a weather map.

**Improving
predictive
skill**





Some food for thought

**Improving
predictive
skill**

**We need
more
technology**





Some food for thought

**Improving
predictive
skill**

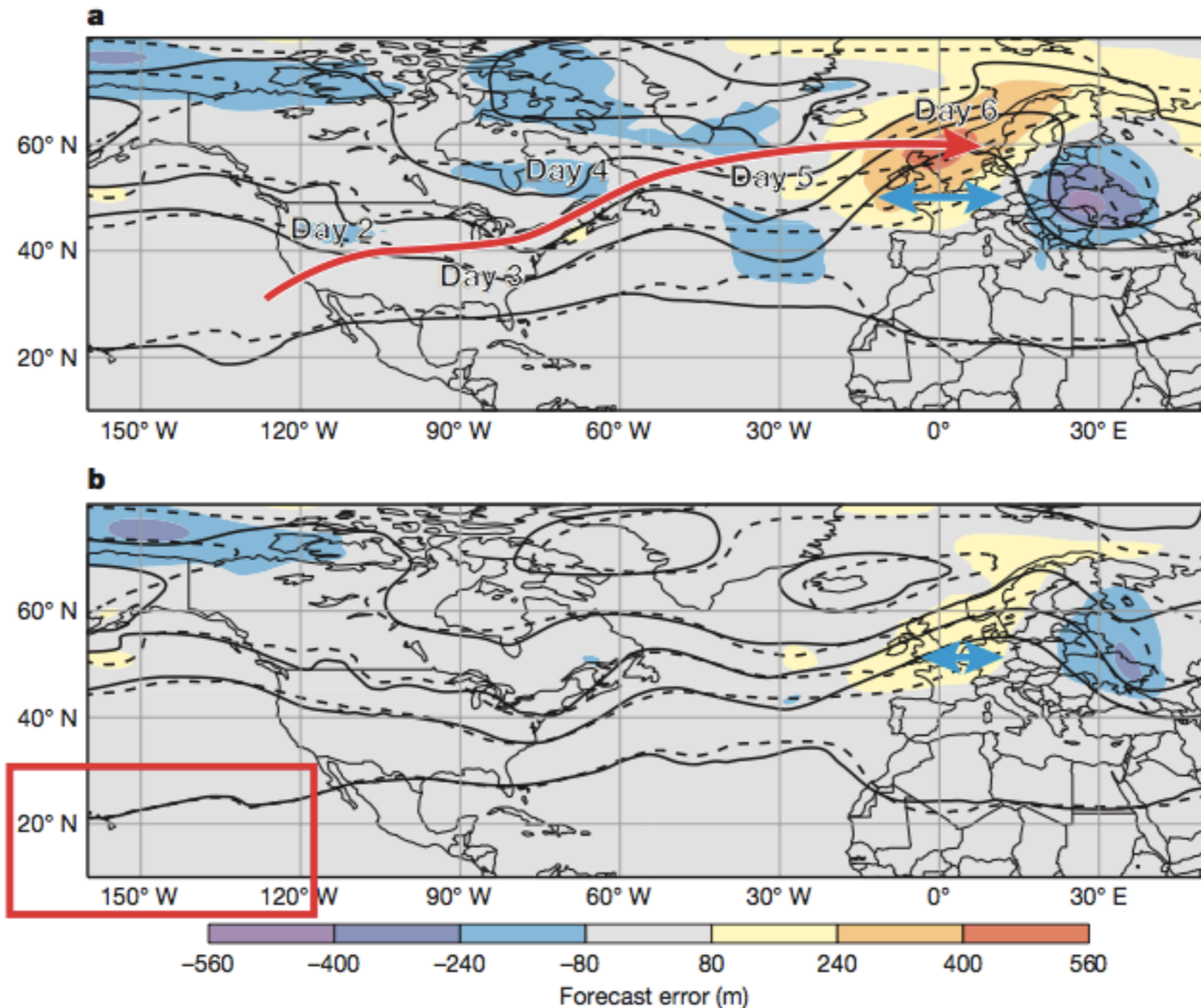
**We need
more
technology**

A multi-disciplinary prediction



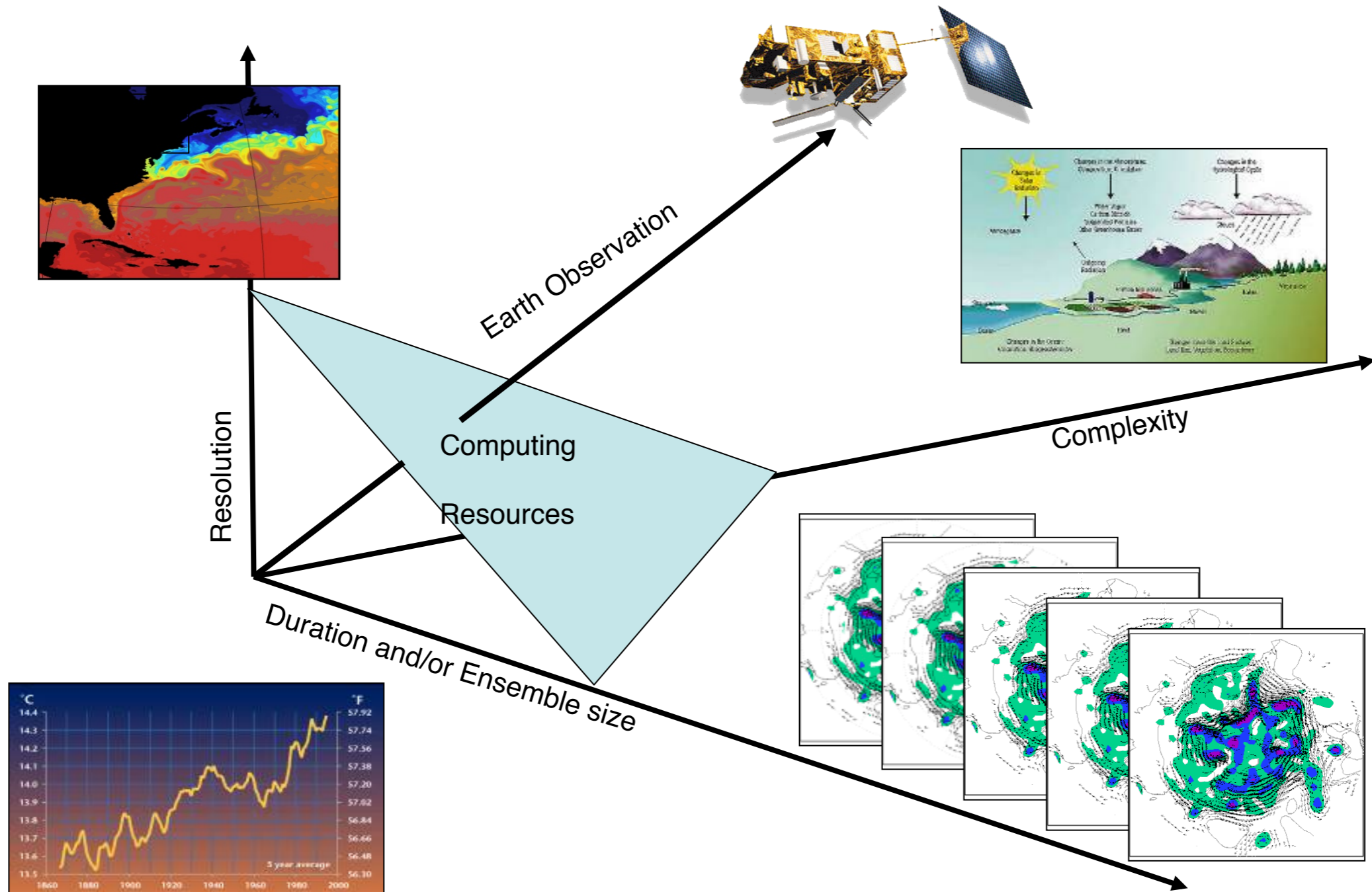


Improving predictive skill



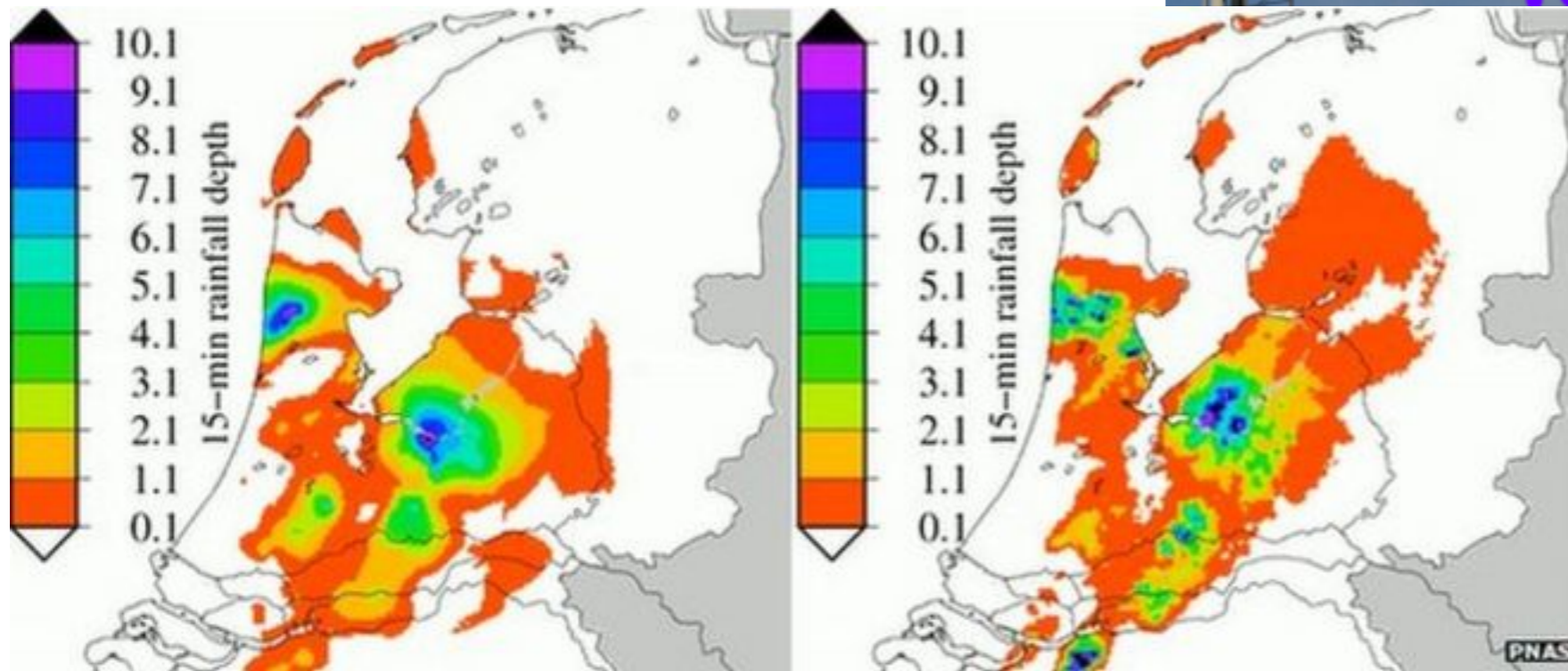
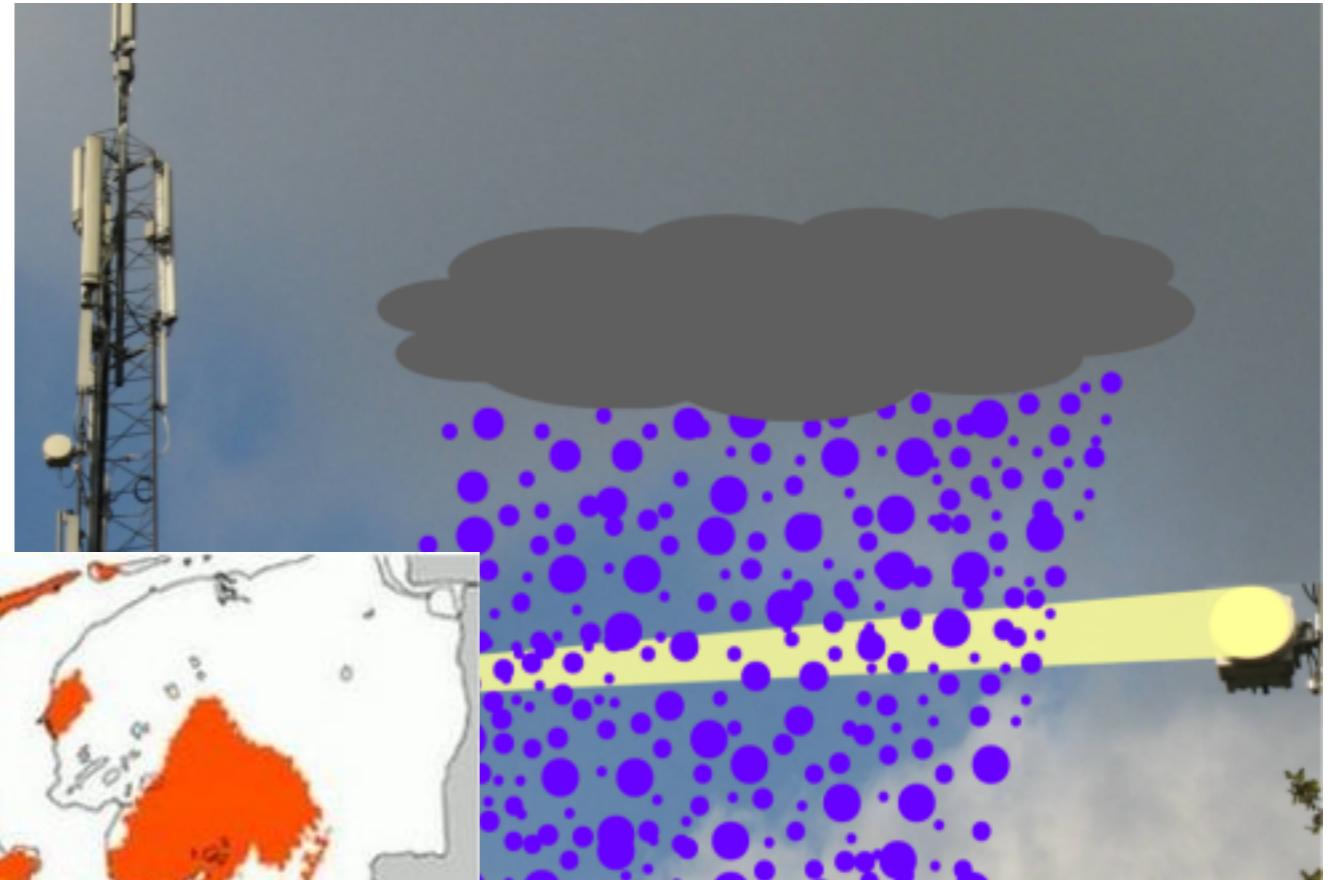


Improving predictive skill





We need more technology





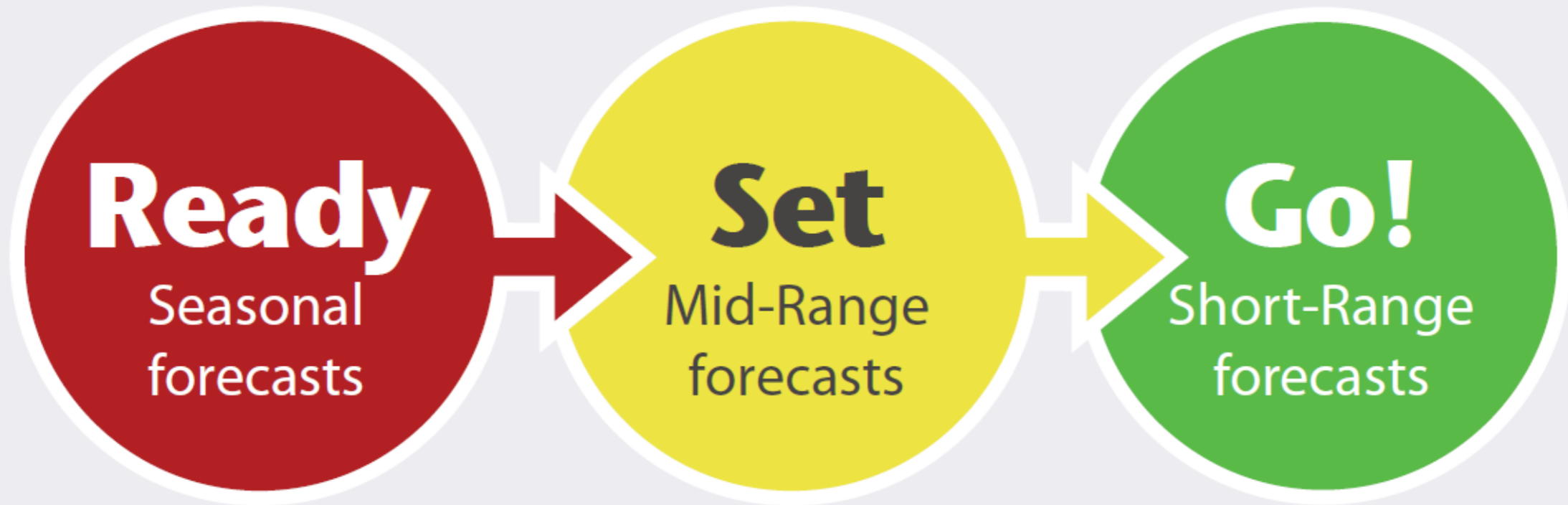
We need more technology





A multi-disciplinary prediction

IMPROVE



- Begin monitoring mid-range and short-range forecasts
- Update contingency plans
- Train volunteers
- Sensitize community
- Enable early-warning system

- Continue monitoring shorter-time-scale forecasts
- Mobilize assessment team
- Alert volunteers
- Warn community
- Local preparation activities

- Deploy assessment team
- Activate volunteers
- Evacuate community

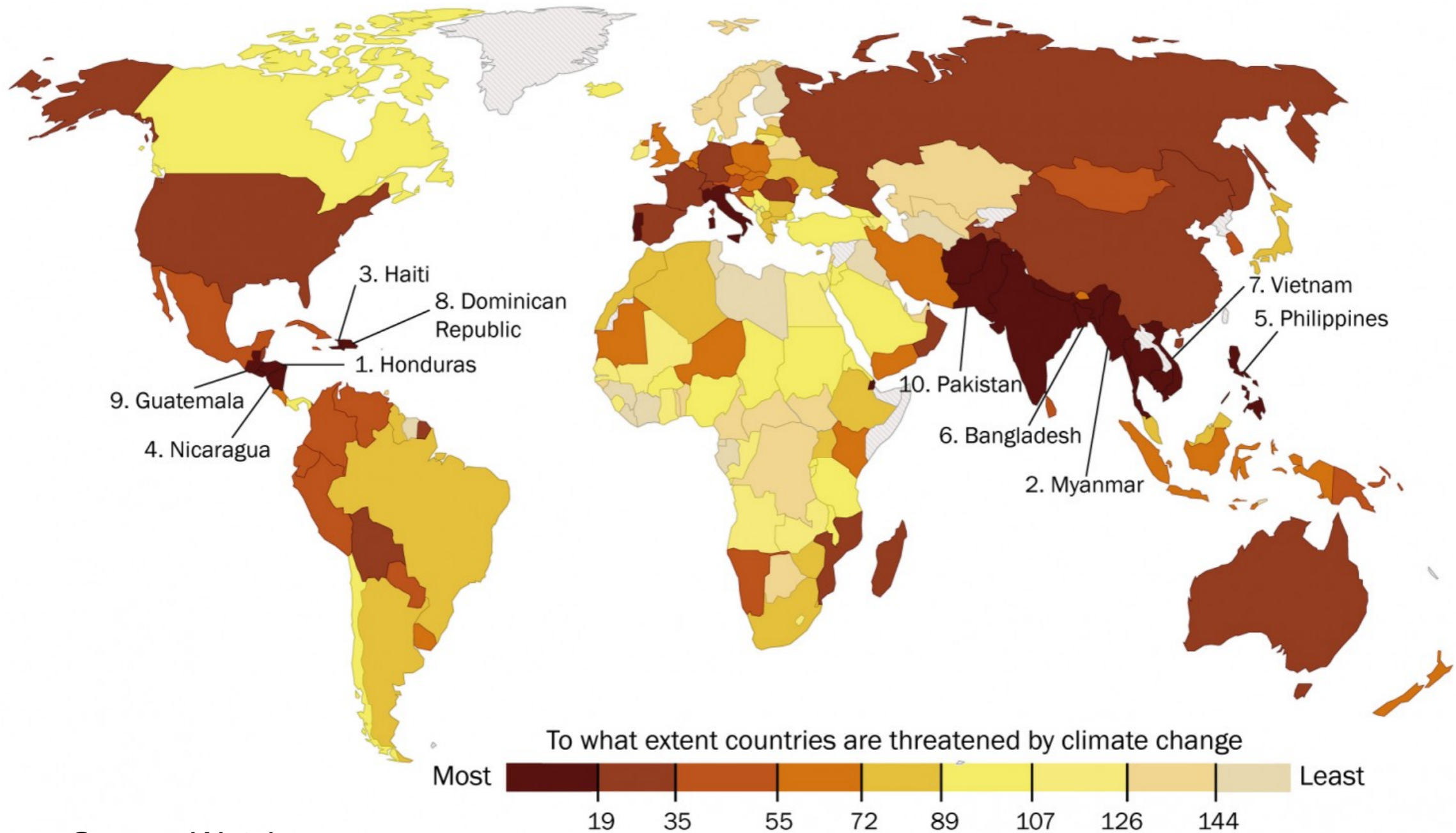
RED CROSS - IRI

Figure B5: Ready-Set-Go tool demonstrating actions to be taken with seasonal, intraseasonal and weather forecasts.





Who suffers the most ?



GermanWatch source





What successful people read before bed?

Google: seamless prediction WMO

<https://www.wmo.int/media/content/seamless-prediction-minutes-months>





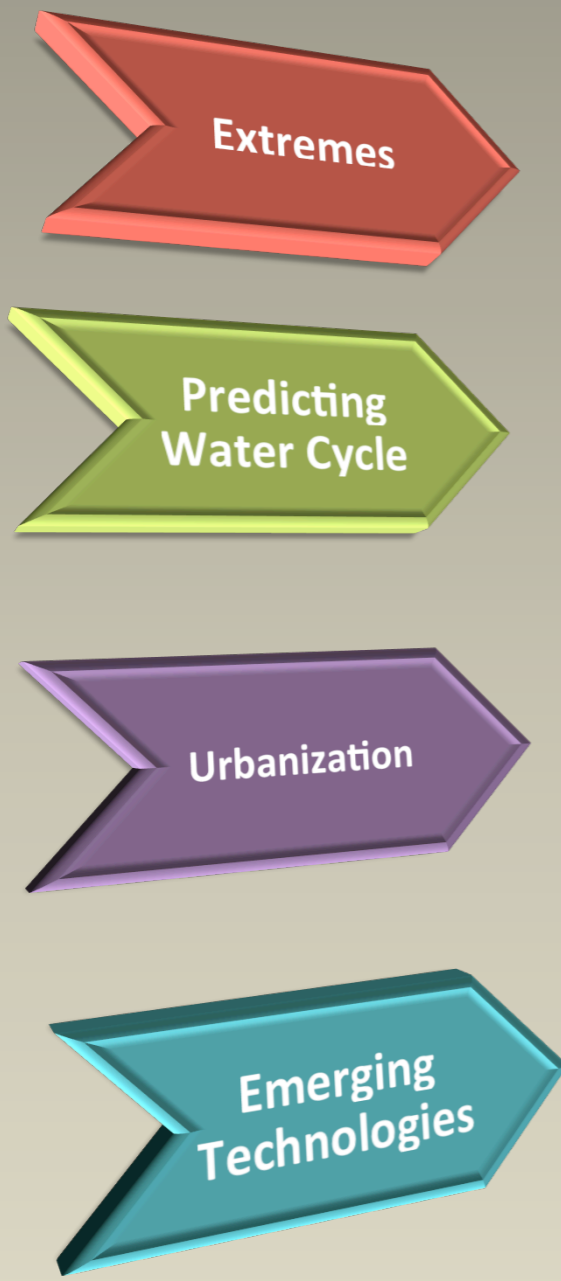
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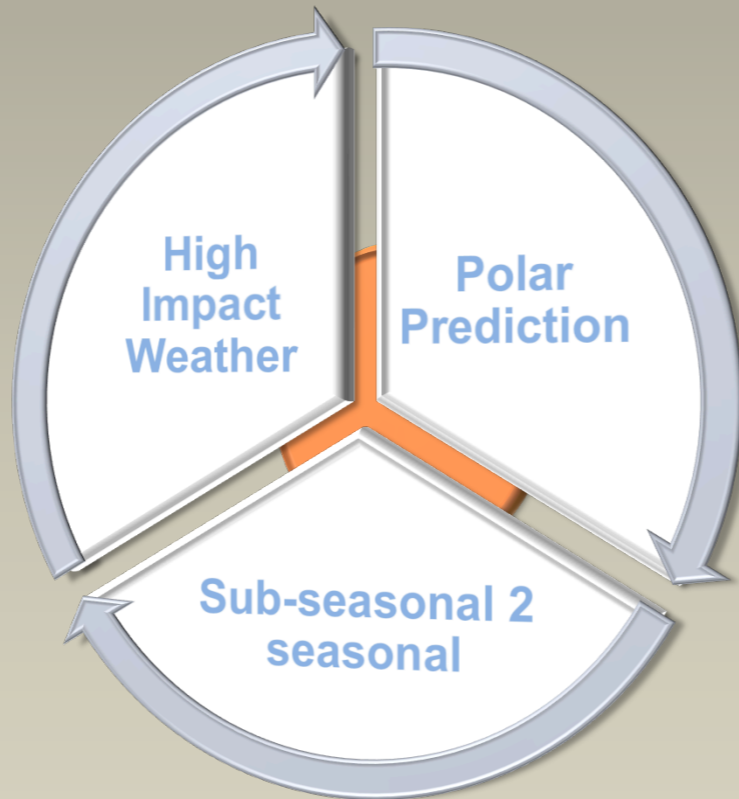
Thanks

pruti@wmo.int

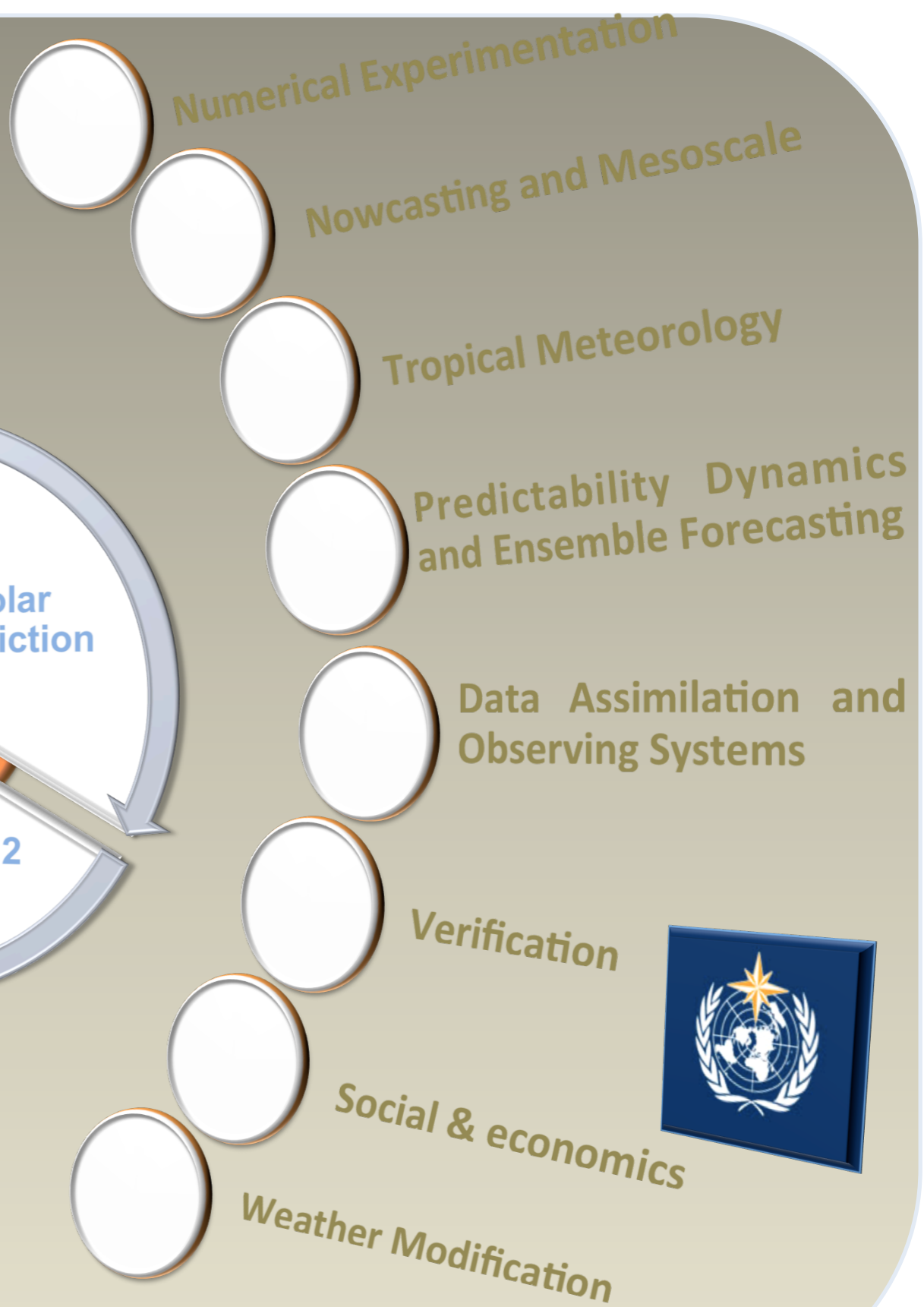
WWRP a seamless programme



Challenges



Key Projects



Working Groups



WWRP a seamless programme



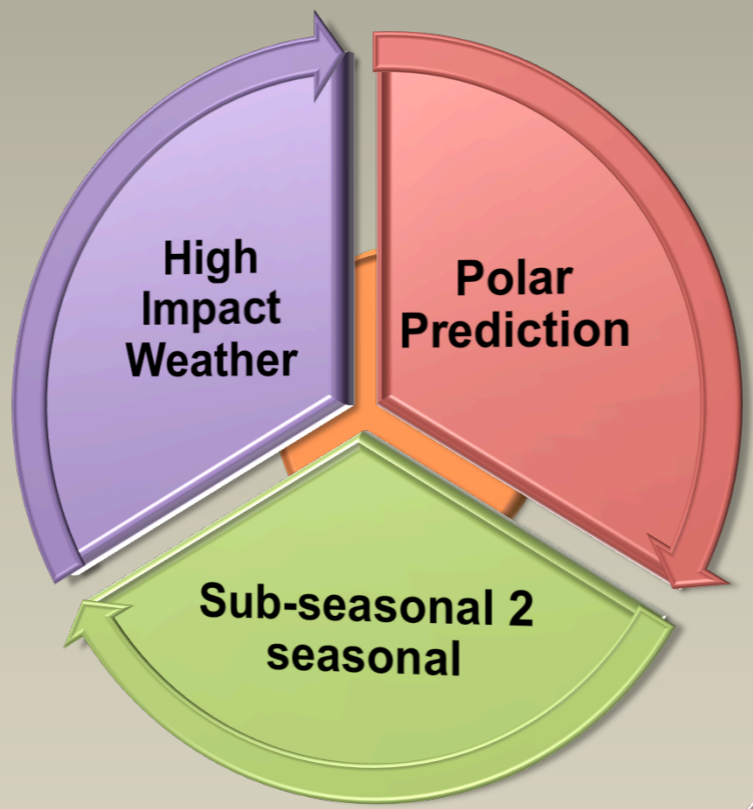
Extremes

Predicting Water Cycle

Urbanization

Emerging Technologies

Challenges



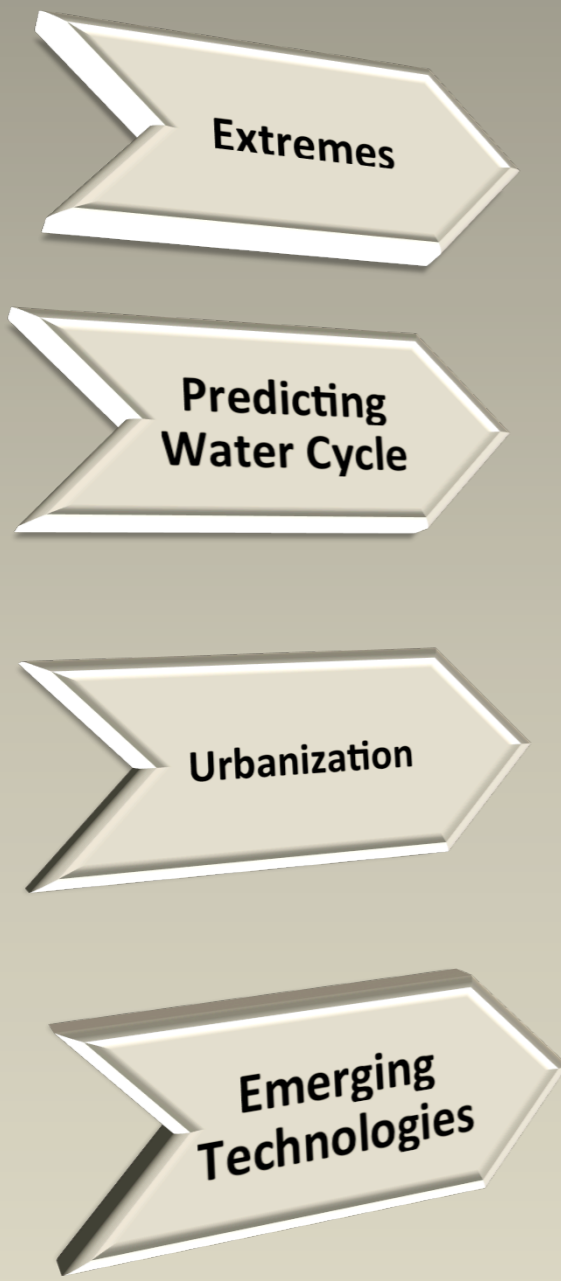
Key Projects

- Numerical Experimentation
- Nowcasting and Mesoscale
- Tropical Meteorology
- Predictability Dynamics and Ensemble Forecasting
- Data Assimilation and Observing Systems
- Verification
- Social & economics
- Weather Modification

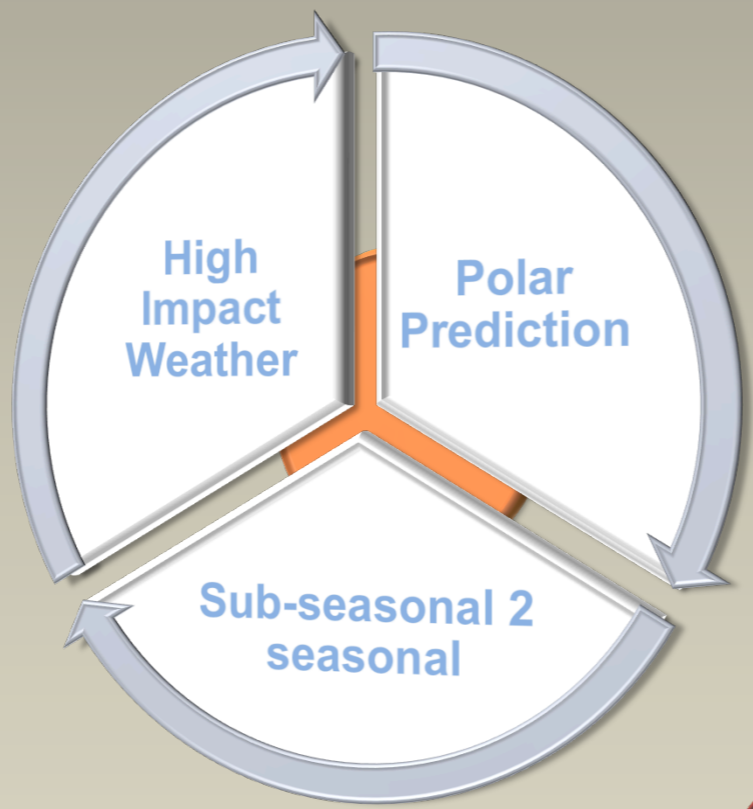
Working Groups



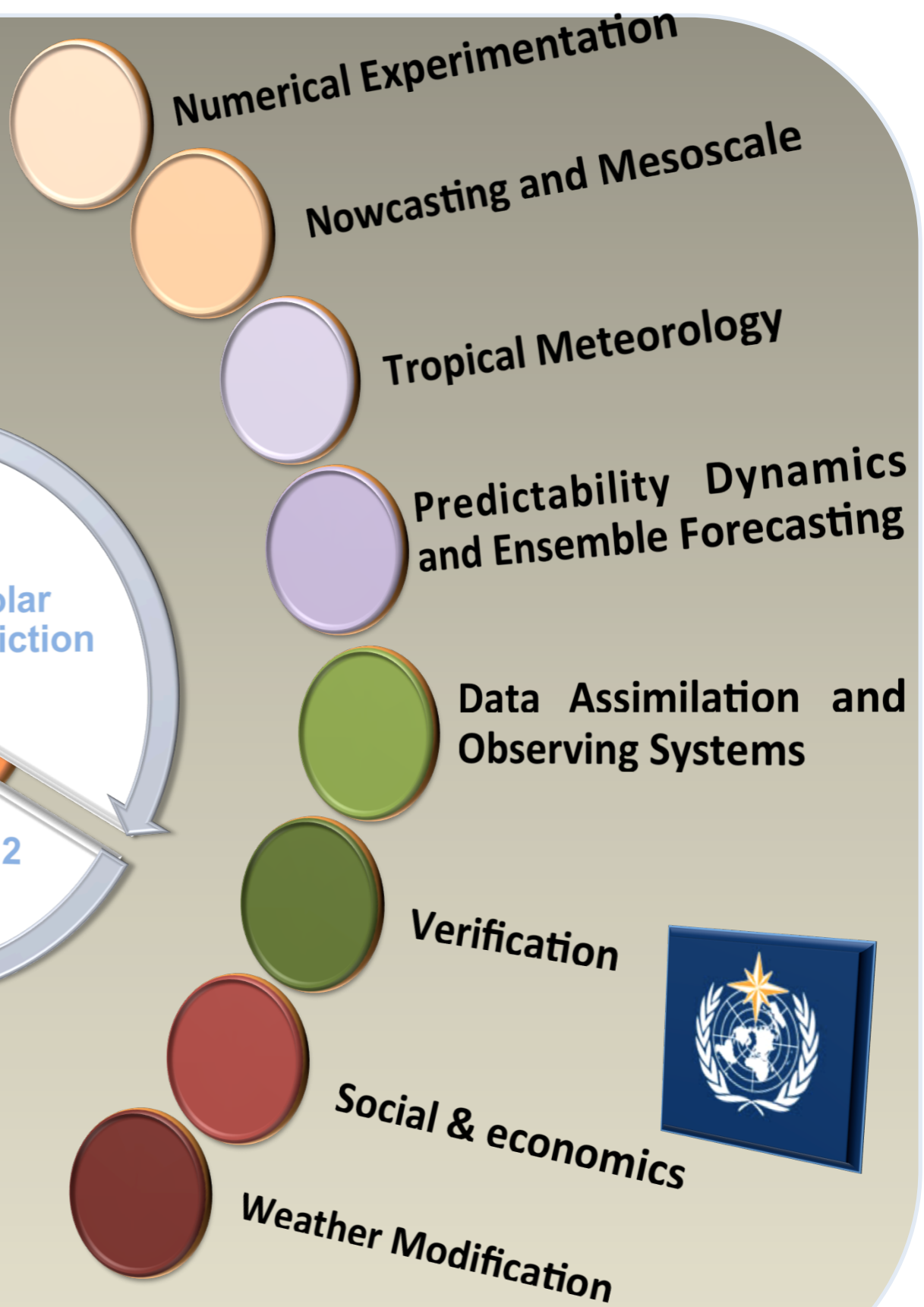
WWRP a seamless programme



Challenges



Key Projects



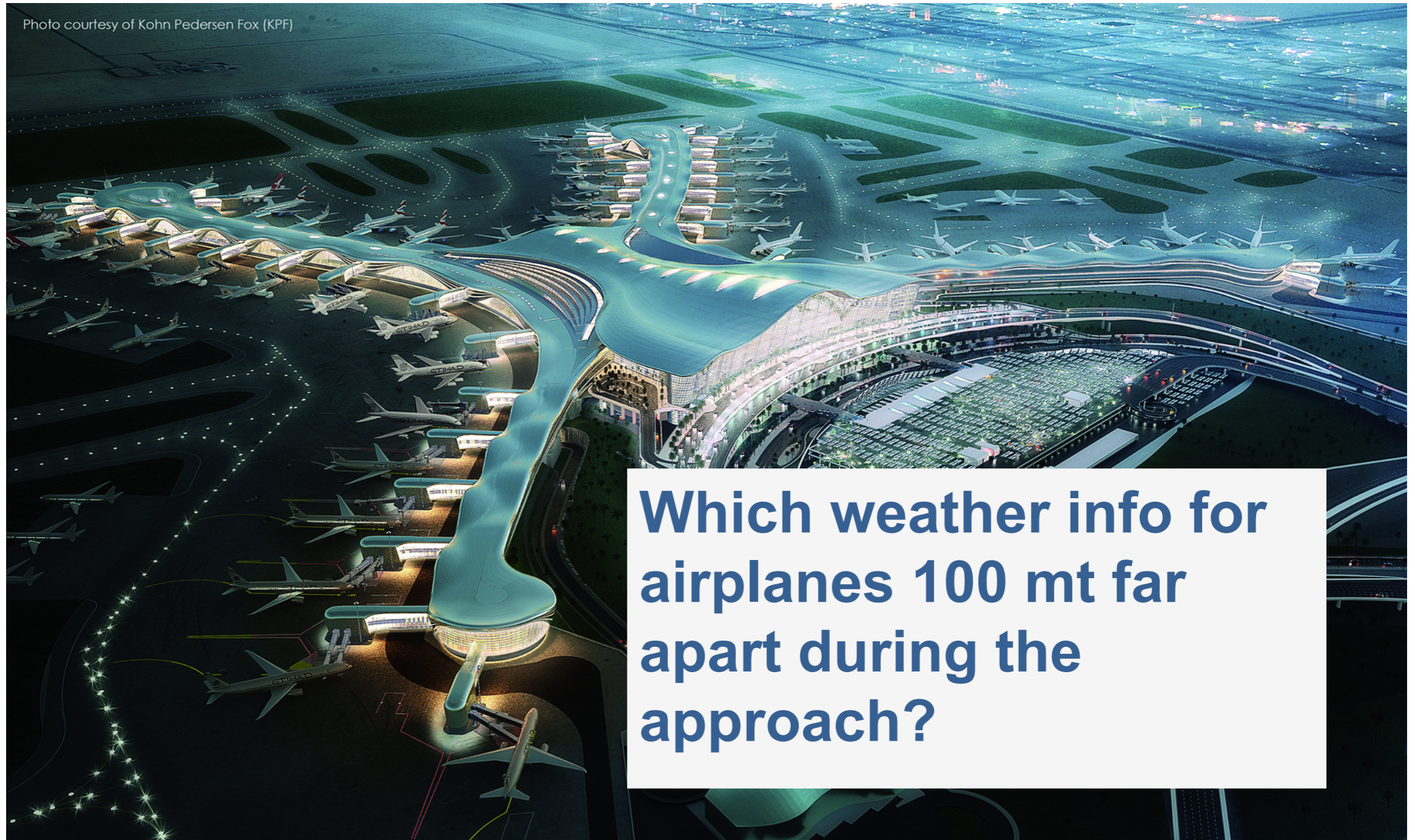
Working Groups





But what happens with questions like these

Photo courtesy of Kohn Pedersen Fox (KPF)



Which weather info for airplanes 100 mt far apart during the approach?

