Developing an integrated predictive capability for extreme rainfall and inundation (Project T4-A7)

Optimising use and communication of probabilistic environmental information

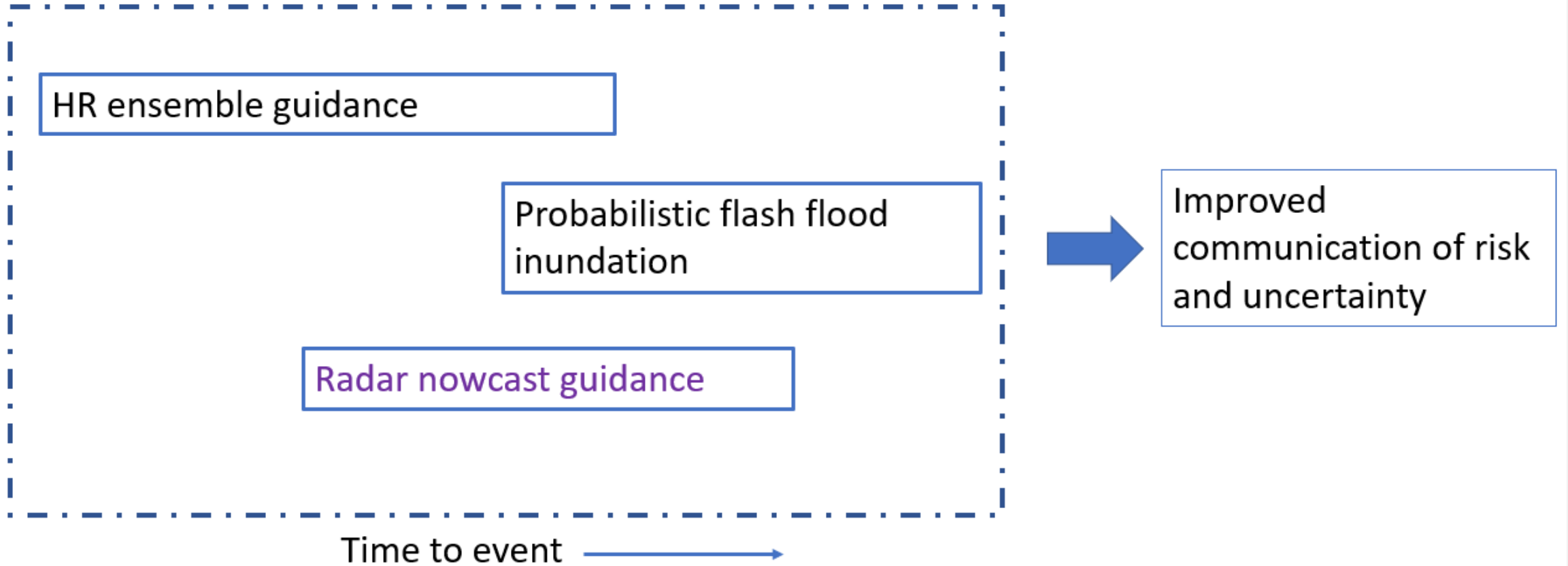Paul Fox-Hughes
Wendy Sharples
Carlos Velasco-Forero
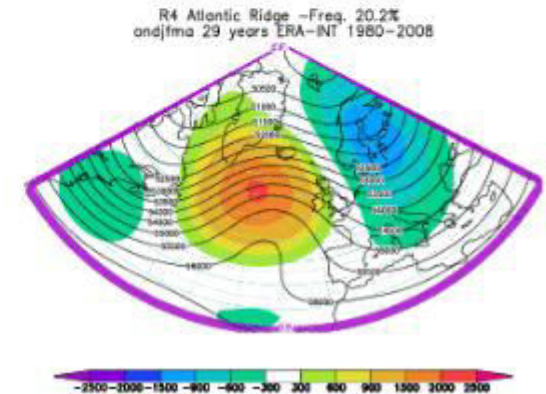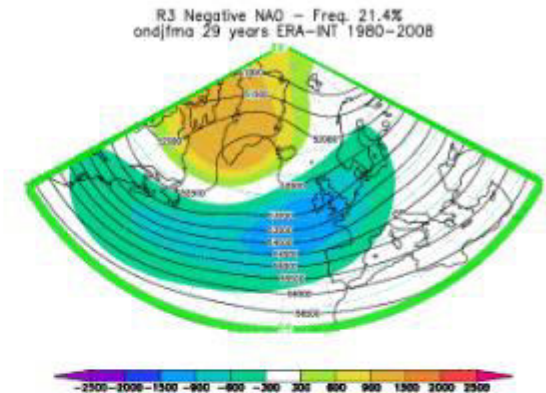Jayaram Pudashine
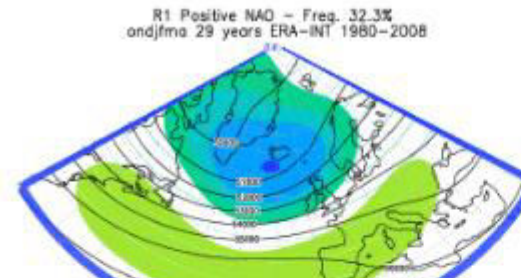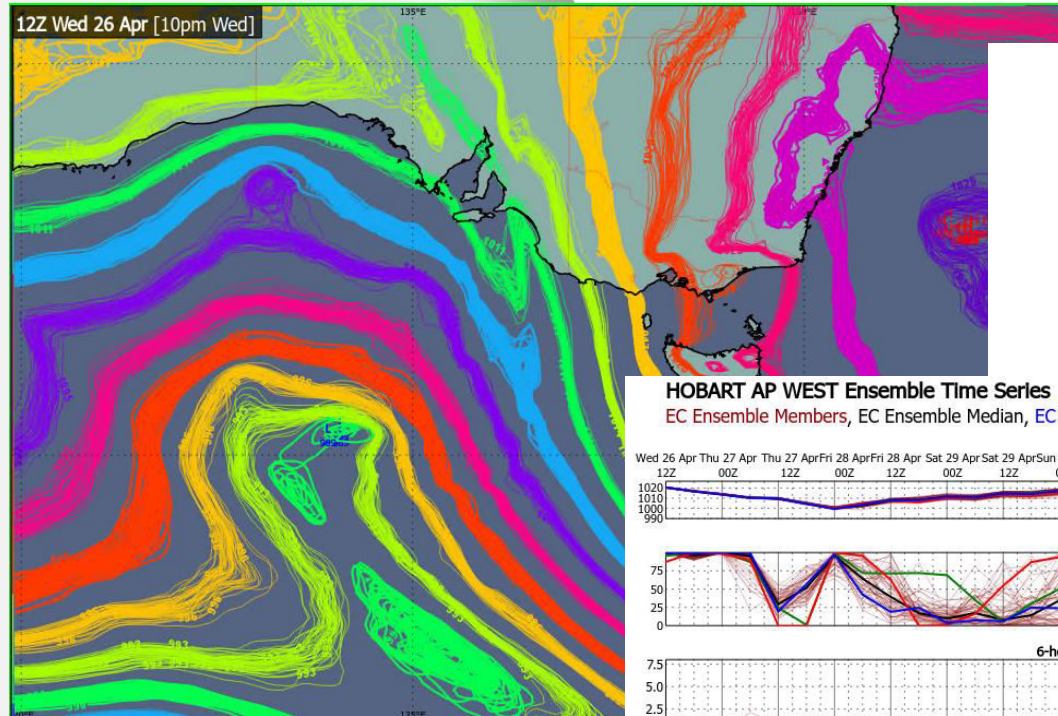Carla Mooney
David Wilke
Dragana Zovko-Rajak
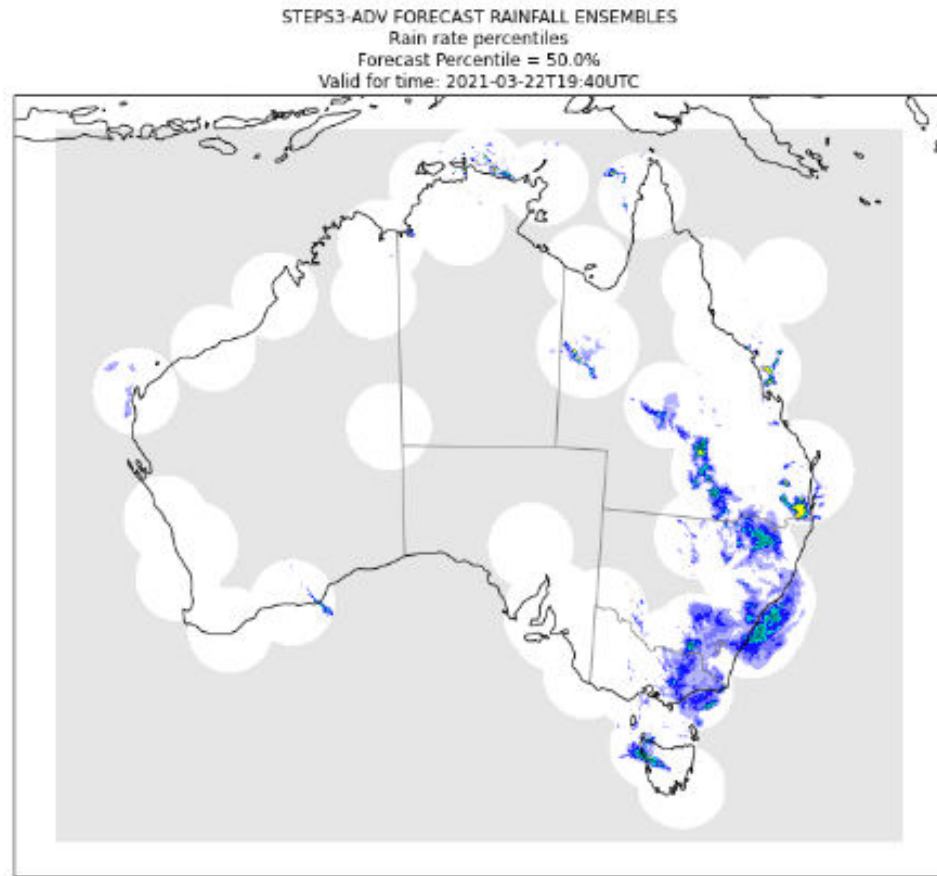Barry Hanstrum

Port
Hedland

Outline

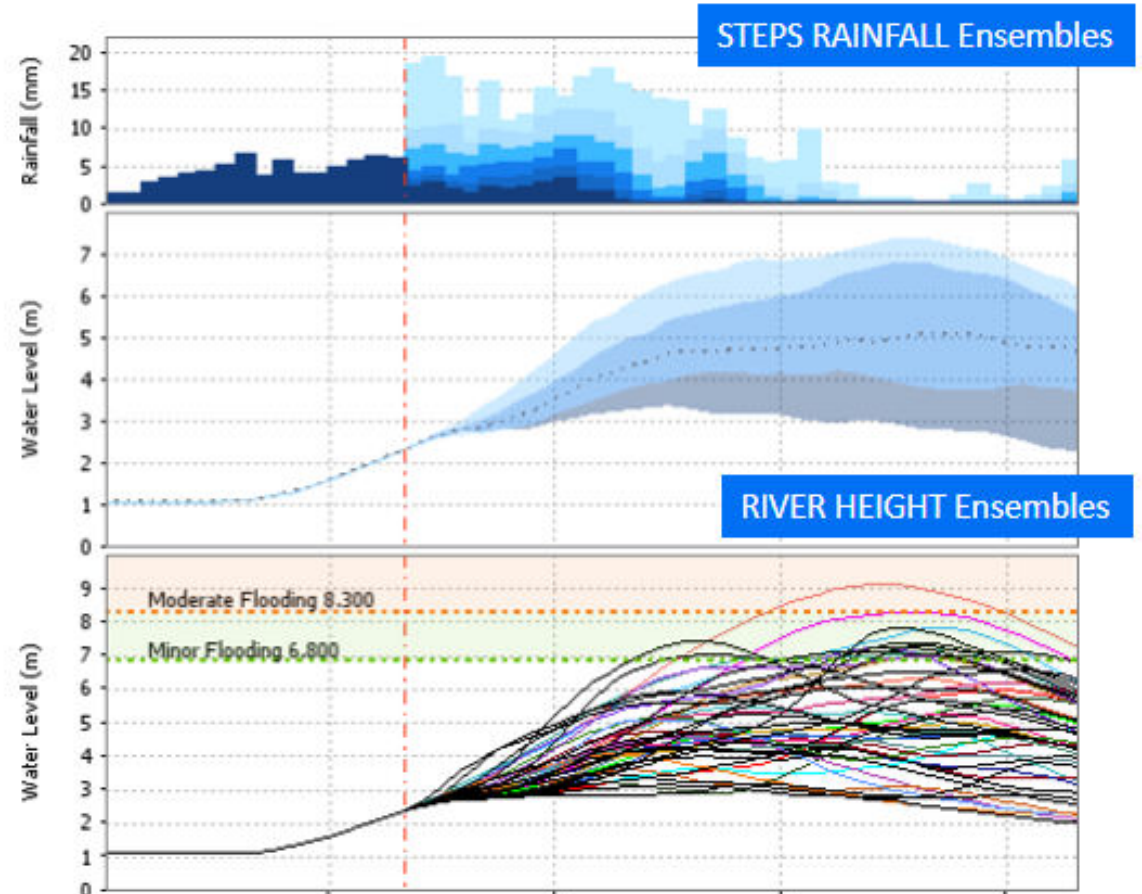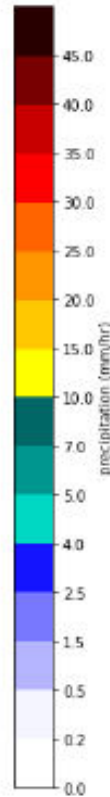# Optimal use of high resolution numerical weather ensembles

Radar Rainfall to assess/predict heavy rainfall in real-time

Gridded radar rainfall observations and ensemble of rainfall nowcasts (0-90min) are update every 5 minutes

STEPS3-ADV FORECAST RAINFALL ENSEMBLES
Rain rate percentiles
Forecast Percentile = 50.0%
Valid for time: 2021-03-22T19:40UTC

Example of Rainfields Forecast (STEPS 0-90min)
National Mosaic - 2021-03-22T19:15UTC

STEPS RAINFALL Ensembles

RIVER HEIGHT Ensembles

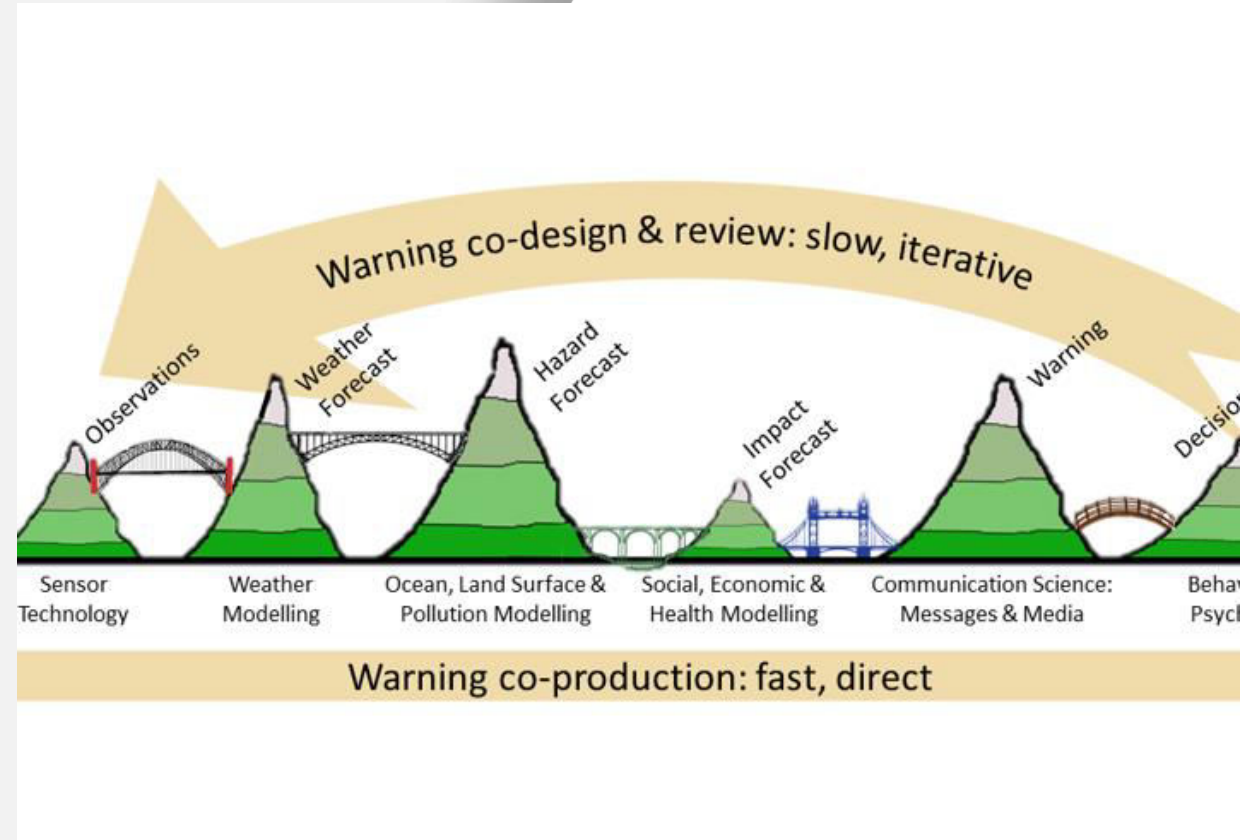Moderate Flooding 8.300

Minor Flooding 6.800

The usage of ensembles of Rainfall Forecasts allows
to create ensembles of Water Level forecasts

Probabilistic flash flood inundation modelling
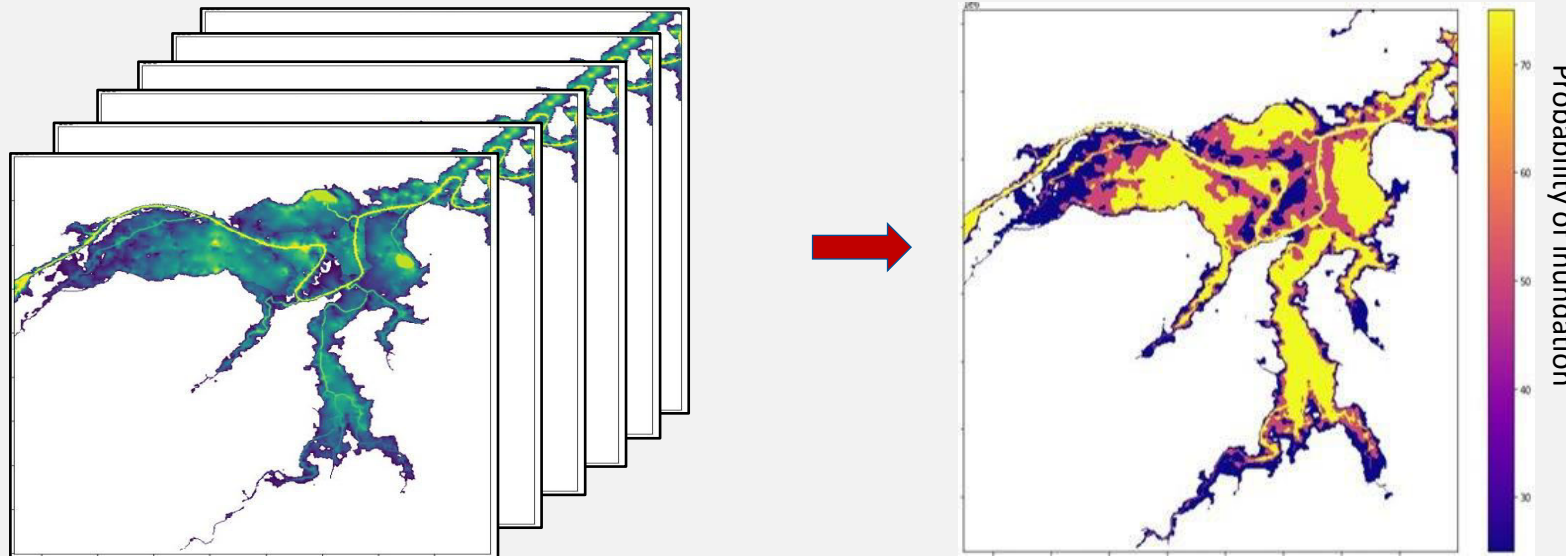
Components integrated guided by value chain approach to communication of environmental messages (rainfall/flash flood potential)

Warning co-design & review: slow, iterative

Observations | Weather Forecast | Hazard Forecast | Impact Forecast | Warning | Decision

Sensor Technology | Weather Modelling | Ocean, Land Surface & Pollution Modelling | Social, Economic & Health Modelling | Communication Science: Messages & Media | Behav Psyc

Warning co-production: fast, direct

Thank You