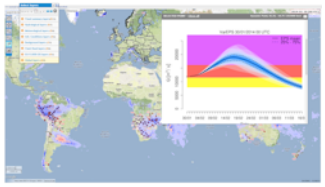
Global Flood Partnership

Global tools and services for managing flood risk and emergencies

State of global flood information

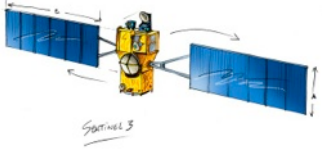
Forecasting

- Feasibility demonstrated



Observation

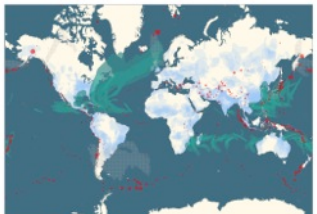
- Daily high resolution data
- Near real-time flood extent



Sentinel-3 artist impression
Credits: ESA - C. Vijoux, 2006

Risk

- Global data to local risk demonstrated



Issues

- Multi-disciplinary
  - Terminology
- Many actors
  - Overlap, lack of awareness
- Application
  - Translation of information for civil protection community
- Demonstration to Service
  - Fitness for use
  - Sustainability
  - Adoption by global organisations

Bridging gap between science and operations – a multidisciplinary challenge

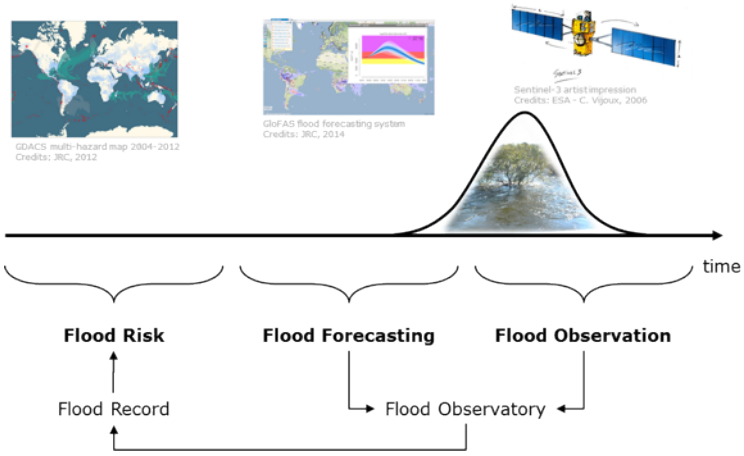
Objective of a Global Flood Partnership

Development of
global flood observational
and modelling infrastructure,

leveraging on existing initiatives, for

better predicting and managing

flood disaster impacts
and flood risk



Country HydroMet and Civil Protection

Partners

Organisations that participated to Working Group meetings

Athena Global
California Institute of Technology (JPL)
Cemaden (Brazil)
Centre De Recherche Public-Gabriel Lippmann
CH2MHILL
Christian Aid
Cima Research Foundation
Dartmouth Flood Observatory and University of Colorado at Boulder
Deltares (Netherlands)
ESSIC, University of Maryland
European Centre for Medium-Range Weather Forecasts (ECMWF)
European Commission Humanitarian Aid and Civil Protection (ECHO)
European Commission Joint Research Centre
FM Global
European Space Agency (ESA)
Georgia Institute of Technology
Guy Carpenter & Company GmbH
Heriot-Watt University
HR Wallingford
Hydro-Logic Services LLP
HKV Consultants
ICF International
IH Cantabria
iMMAP
Imperial College London
Institute for Environmental Studies, VU University Amsterdam, Netherlands
International Federation of Red Cross and Red Crescent Societies (IFRC)
Information Technology for Humanitarian Assistance, Cooperation and Action (Ithaca)
Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences
International Center for Water Hazard and Risk Management (ICHARM)
International Water Management Institute (IWMI)
Lake Chad Basin Commission
Loughborough University
Meteorological Connections, LLC
Ministry of planning and development - Regional Water Administration
NASA Goddard Space Flight Center (GSFC)
NASA GSFC, Science Systems and Applications, Inc.
NASA Headquarters
NASA Jet Propulsion Laboratory (JPL)
NASA Marshall Space Flight Center (MSFC)
National Center for Atmospheric Research (NCAR)
National Centre for Atmospheric Sciences
Nigerian National Emergency Management Agency
NOAA/NCEP/CPC (National Centre for Environmental Prediction)
NOAA/NESDIS (National Environmental Satellite, Data, and Information Service)
NOAA/NWS/OHD (National Weather Service)
Pacific Disaster Center
Pacific Northwest National Lab
Pakistan Meteorological Department
Practical Action UK
Princeton University
Riverside
SERVIR
São Paulo State University (UNESP)
Swedish Meteorological and Hydrological Institute
Swiss Re
UN Office for the Coordination of Humanitarian Affairs
UCAD-Dakar-Senegal
UK Flood Forecasting Centre
UK Met Office
UNESCO-IHE
UNITAR\UNOSAT
University of Bristol
University of Bristol - Willis Research Network
University Corporation for Atmospheric Research (UCAR)
University of Connecticut
University of Kansas
University of Exeter
University of Maryland, Earth System Science Interdisciplinary Center
University of Oklahoma
University of Washington
University of Massachusetts/World Bank
University of Reading
USAID/OFDA
U.S. Army Engineer Research and Development Center, Coastal and Hydraulics Laboratory
USGS Earth Resources Observation and Science
Vienna University of Technology, Department of Geodesy and Geoinformation
Walker Institute
Water Resource Associates LLP
World Bank
World Bank GFDRR
World Meteorological Organization

Coordination structure: pilot 2014

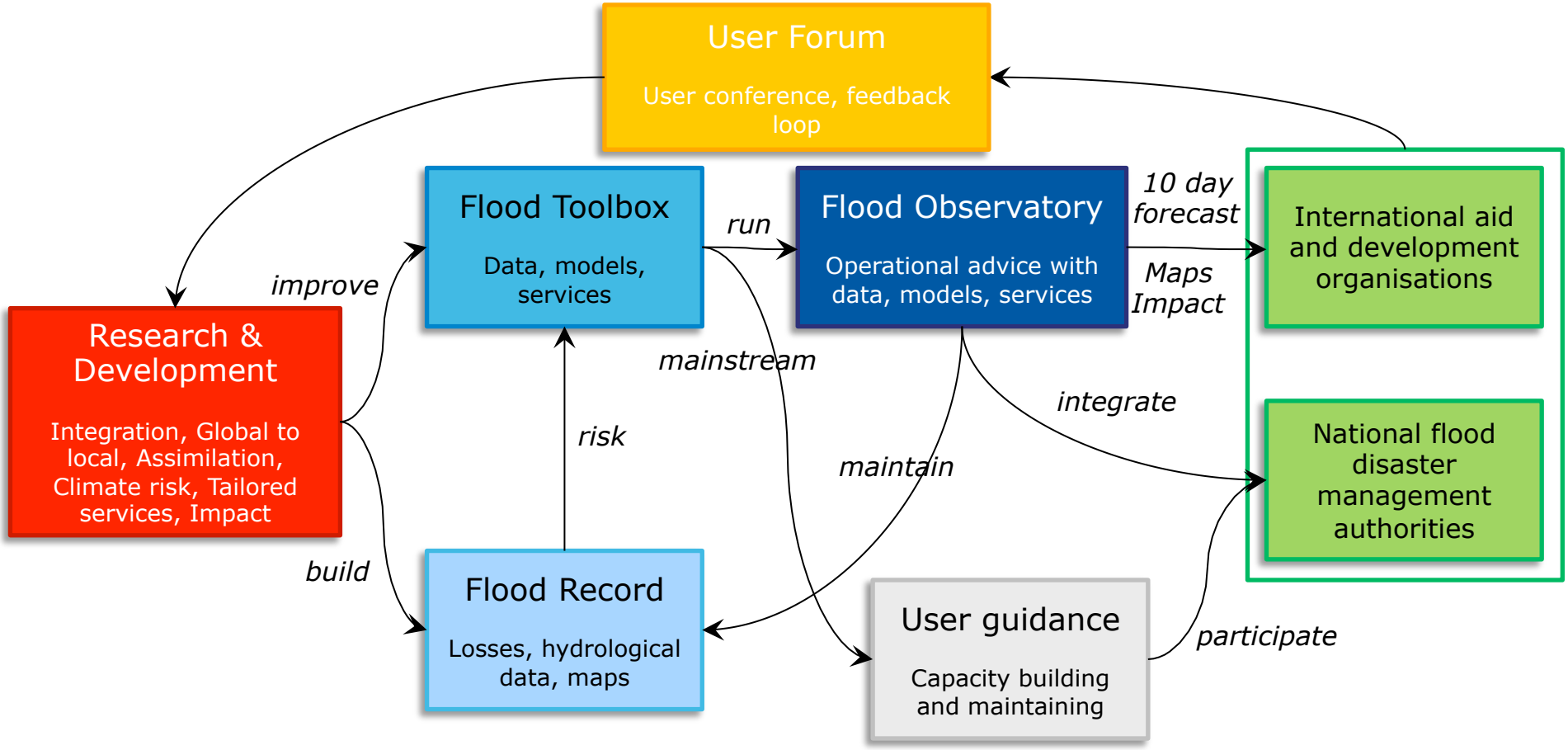
Co-chairs: Overall Coordination

- JRC, Dartmouth Flood Observatory (DFO, University of Colorado)

Pillar coordinators

- **Global Flood Service and Toolbox Pillar**
  - JRC, Deltares,
  - University of Kansas, ECMWF and World Bank GFDRR
- **Global Flood Observatory Pillar**
  - DFO, JRC
- **Global Flood Record Pillar**
  - CIMA, Italy (support of UNISDR), DFO
- **User Guidance Pillar**:
  - JRC, with support of WMO

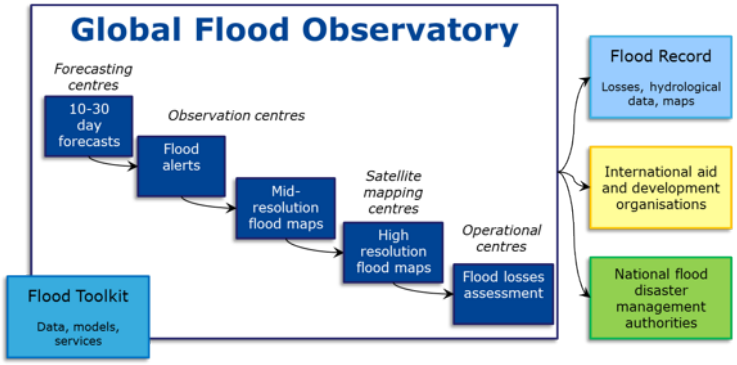
Global Flood Partnership

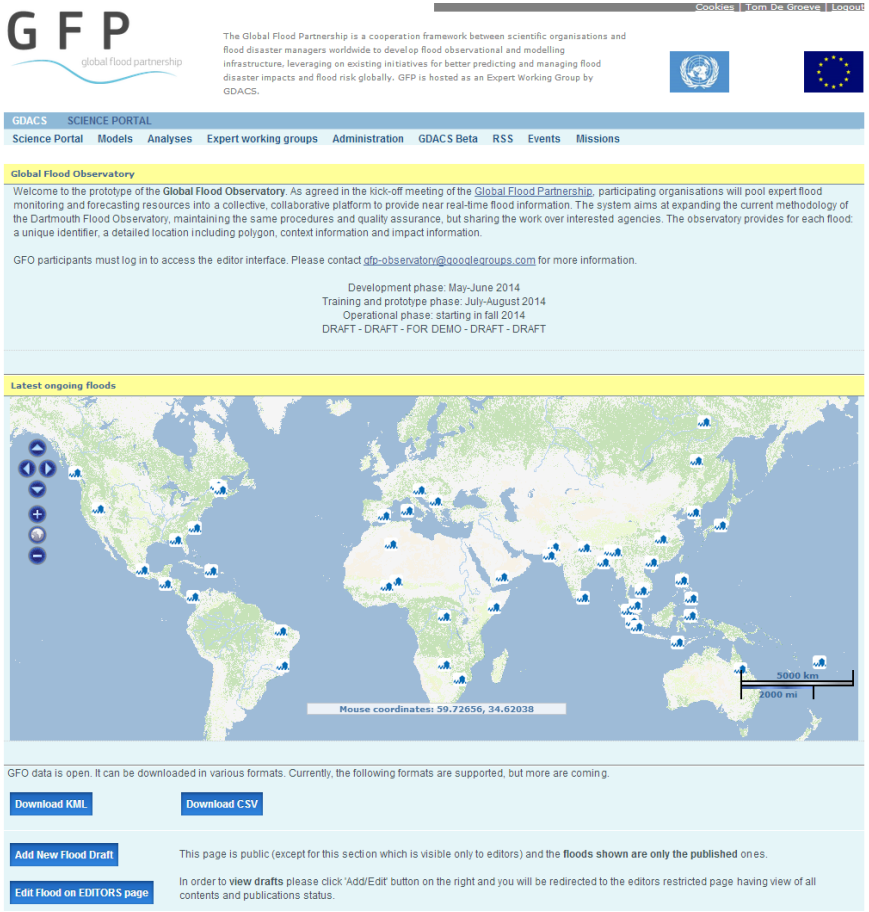


Observatory

Pre-operational flood alerts

- In GDACS context
- International organisations
- 31 volunteering partners

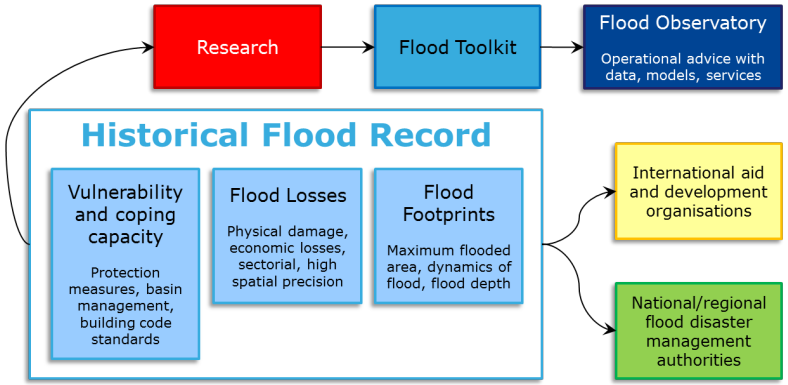


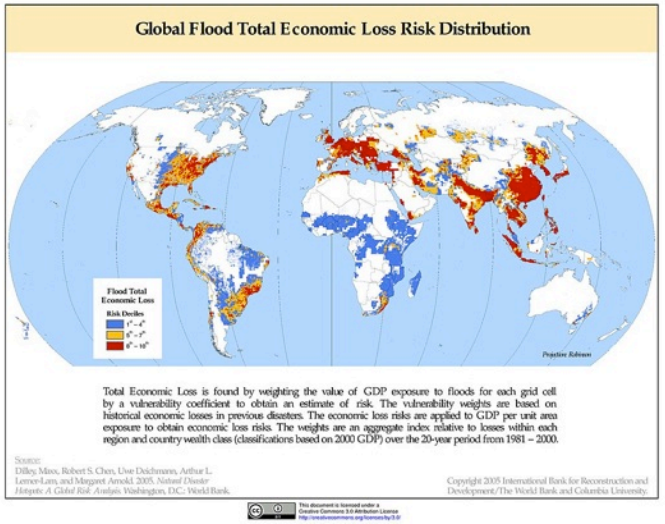


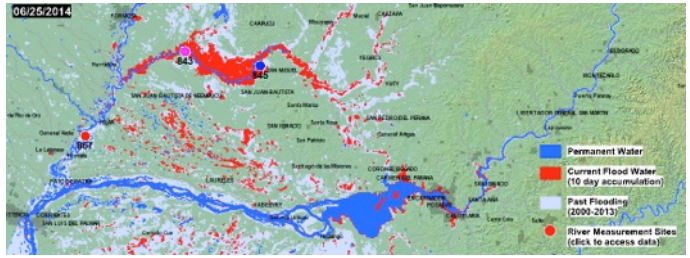
Global Flood Record

Record flood extent and losses

- For risk modelling
- Historical databases

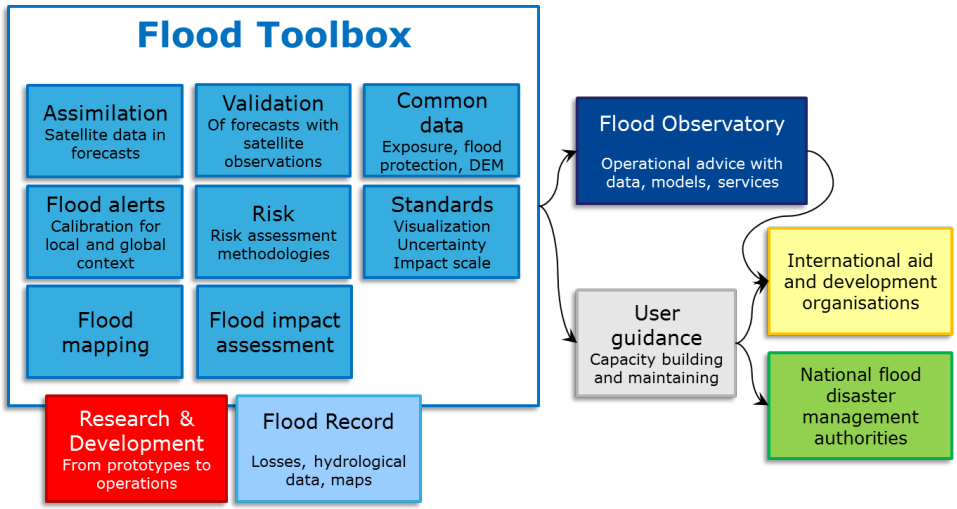


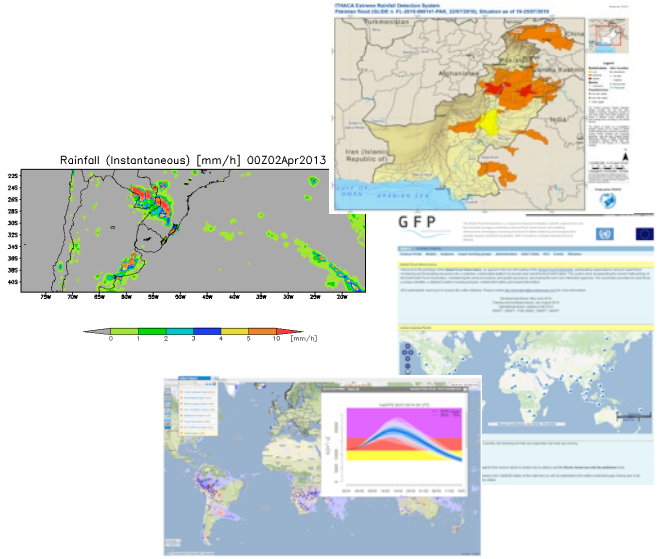


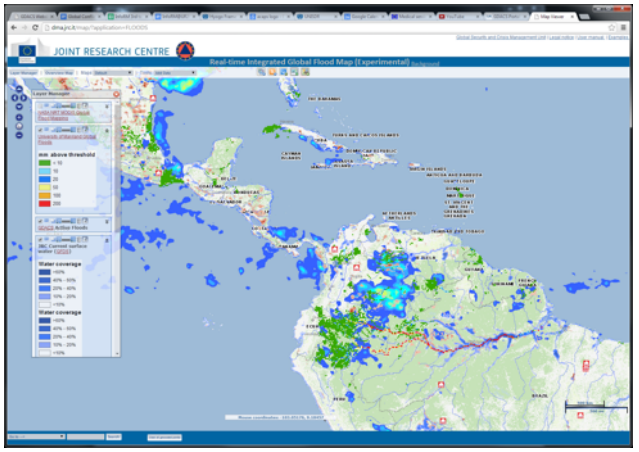


Toolbox and Services

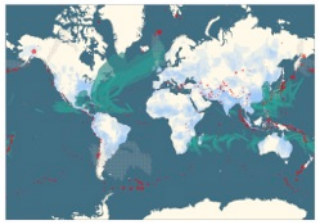
Catalogue of tools and services



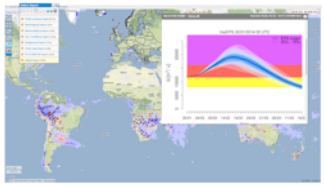




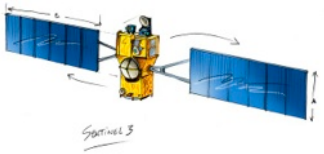
GFP in the flood cycle



GDACS multi-hazard map 2004-2012
Credits: JRC, 2012



GloFAS flood forecasting system
Credits: JRC, 2014



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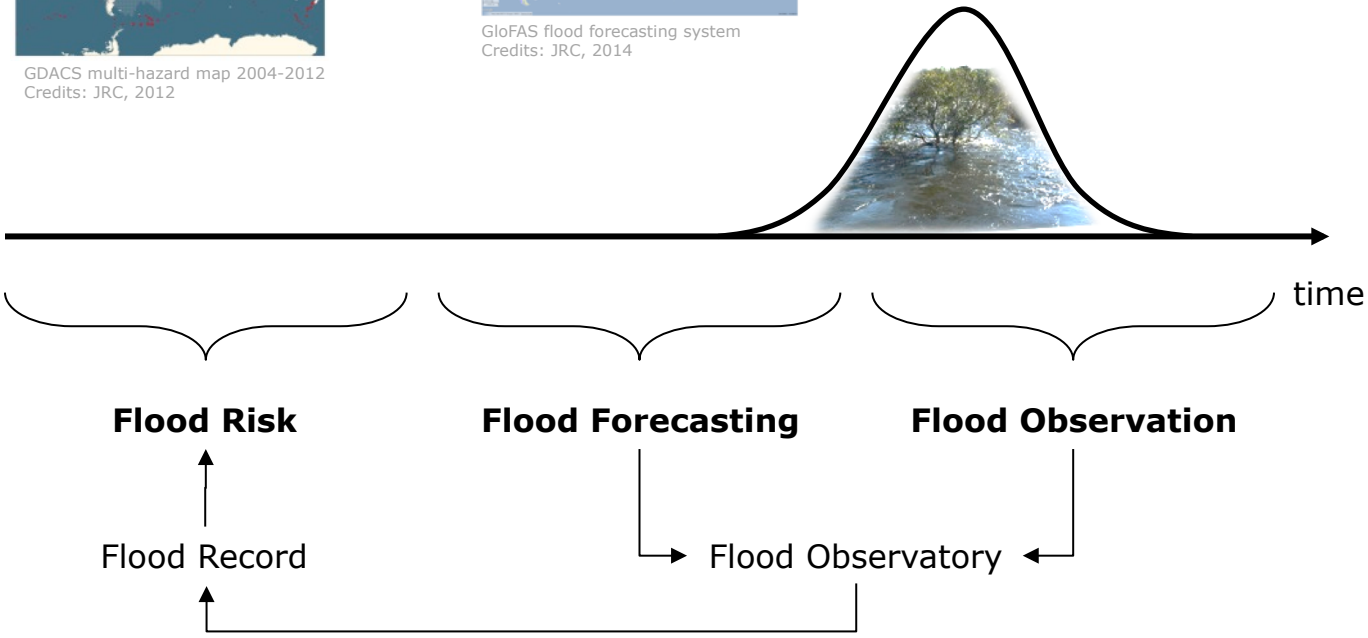

Conclusion: added value of GFP

- **Operational** flood impact warnings
  - Tailored information for international response organisations

- **Collection** of tools, services and data for global flood observation and modelling
  - Setting research priorities? Defining standards? Benchmarking? Ensembles?

- Coordinated approach to **interact with users**
  - Advocacy and Feedback; Building Ownership
  - Comparative training material? Pilot countries?

Participate: sign up for mailing lists at

http://portal.gdacs.org/Global-Flood-Partnership

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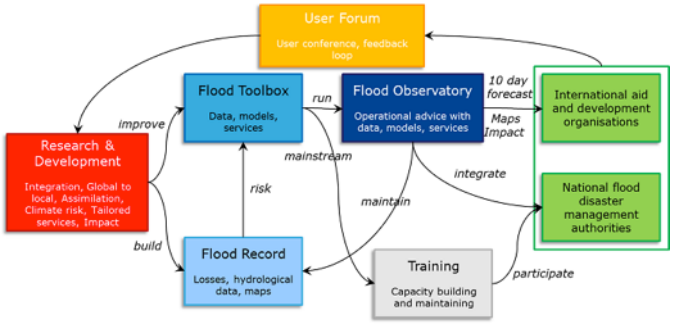
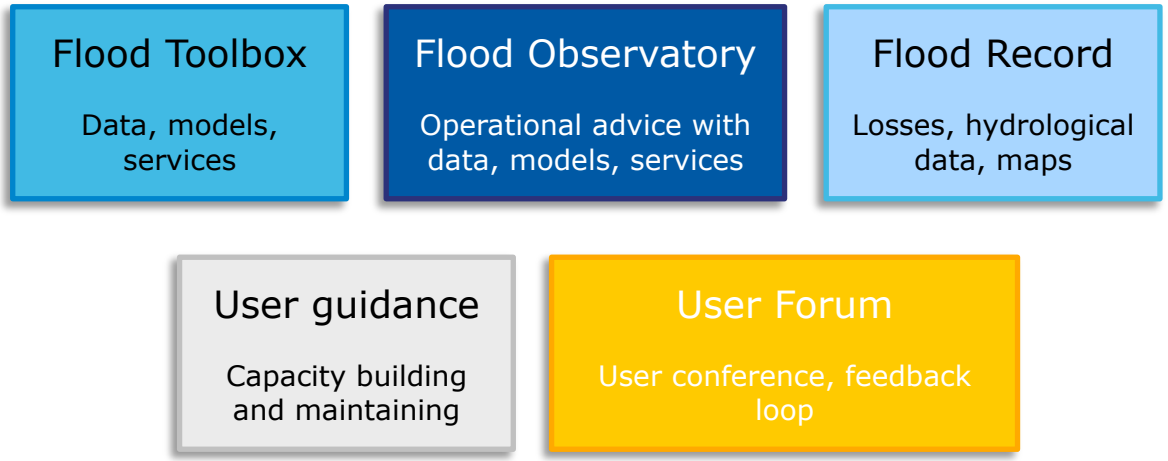
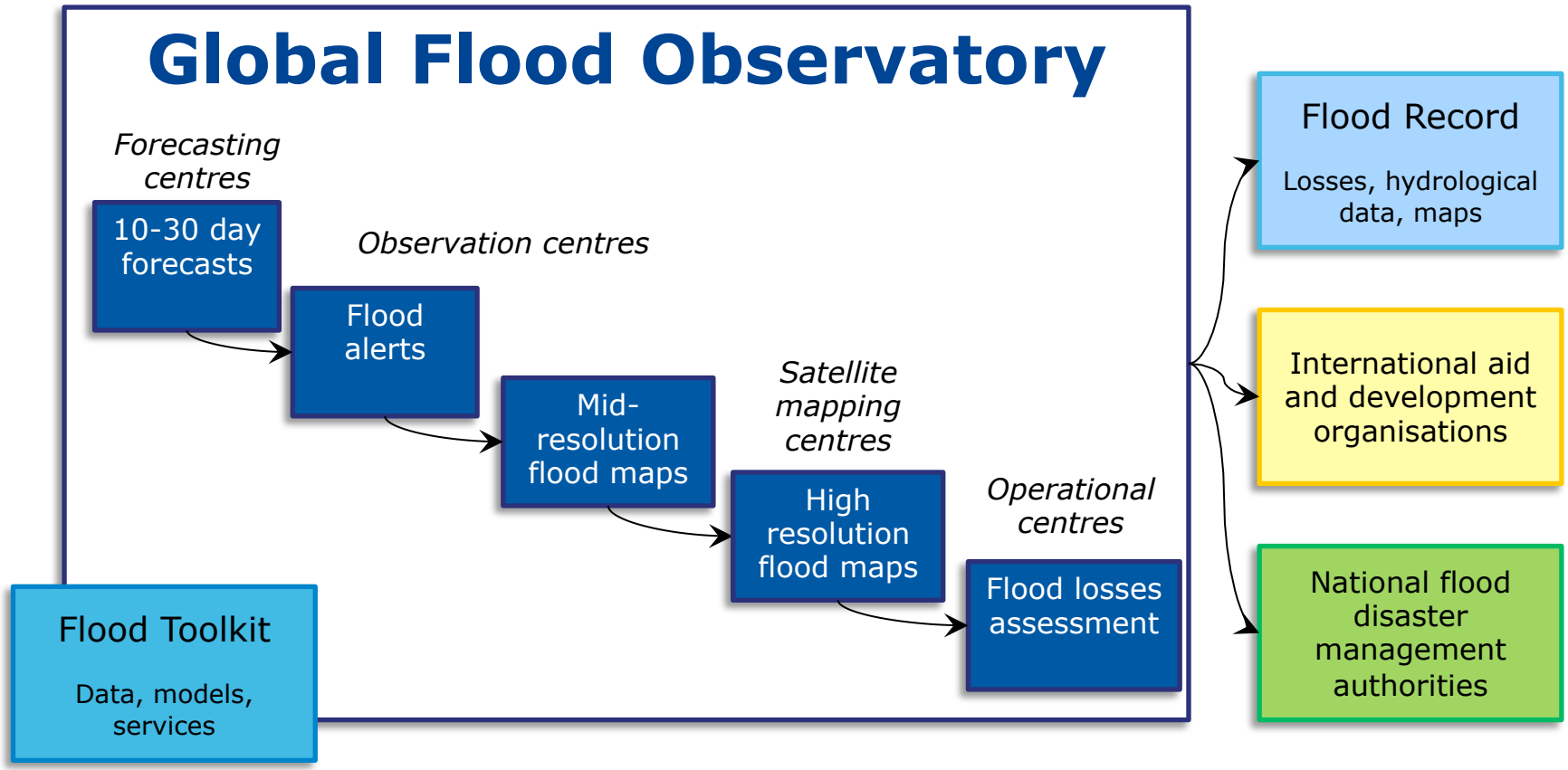
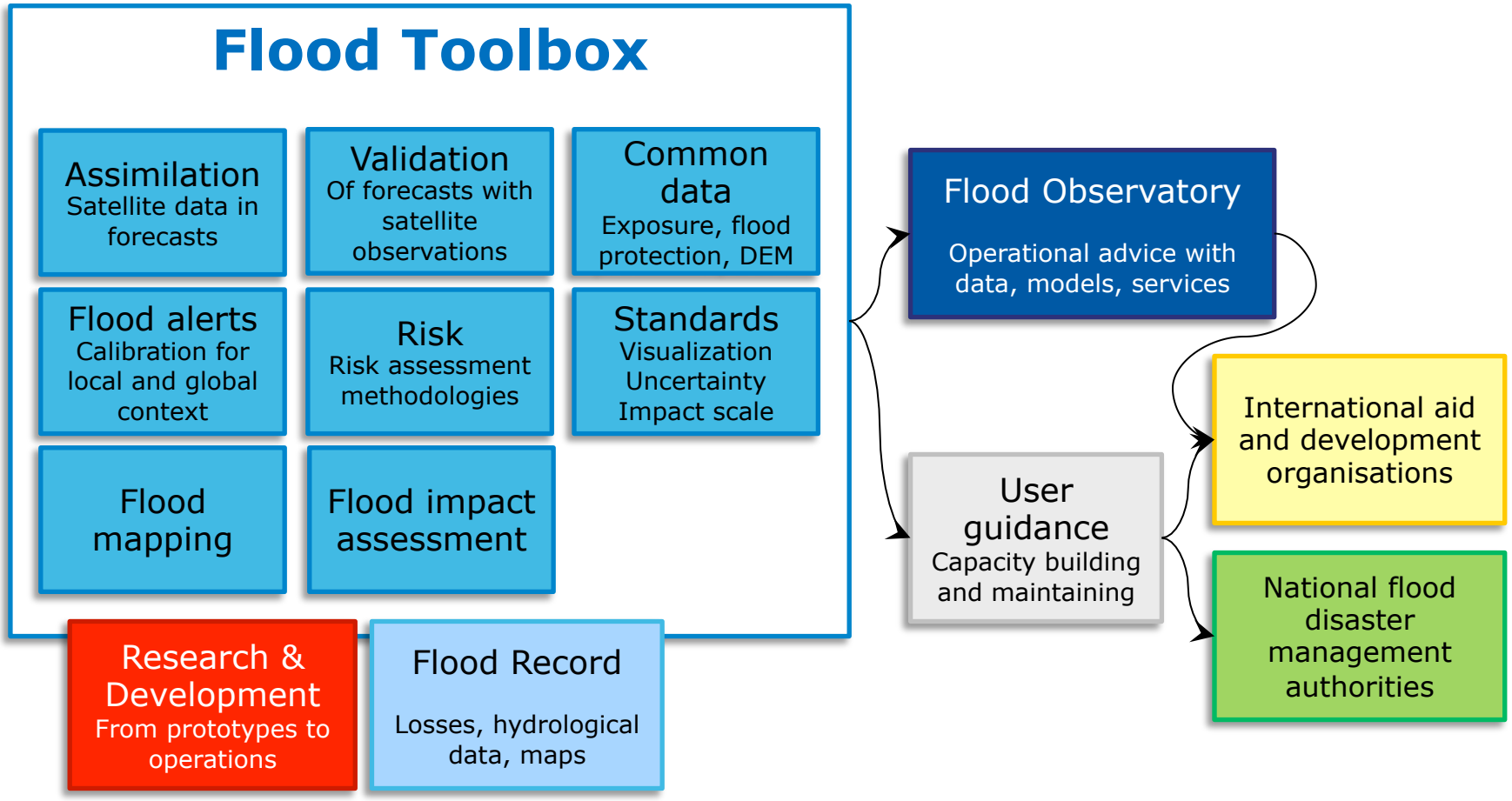
Robert.Brakenridge@Colorado.edu

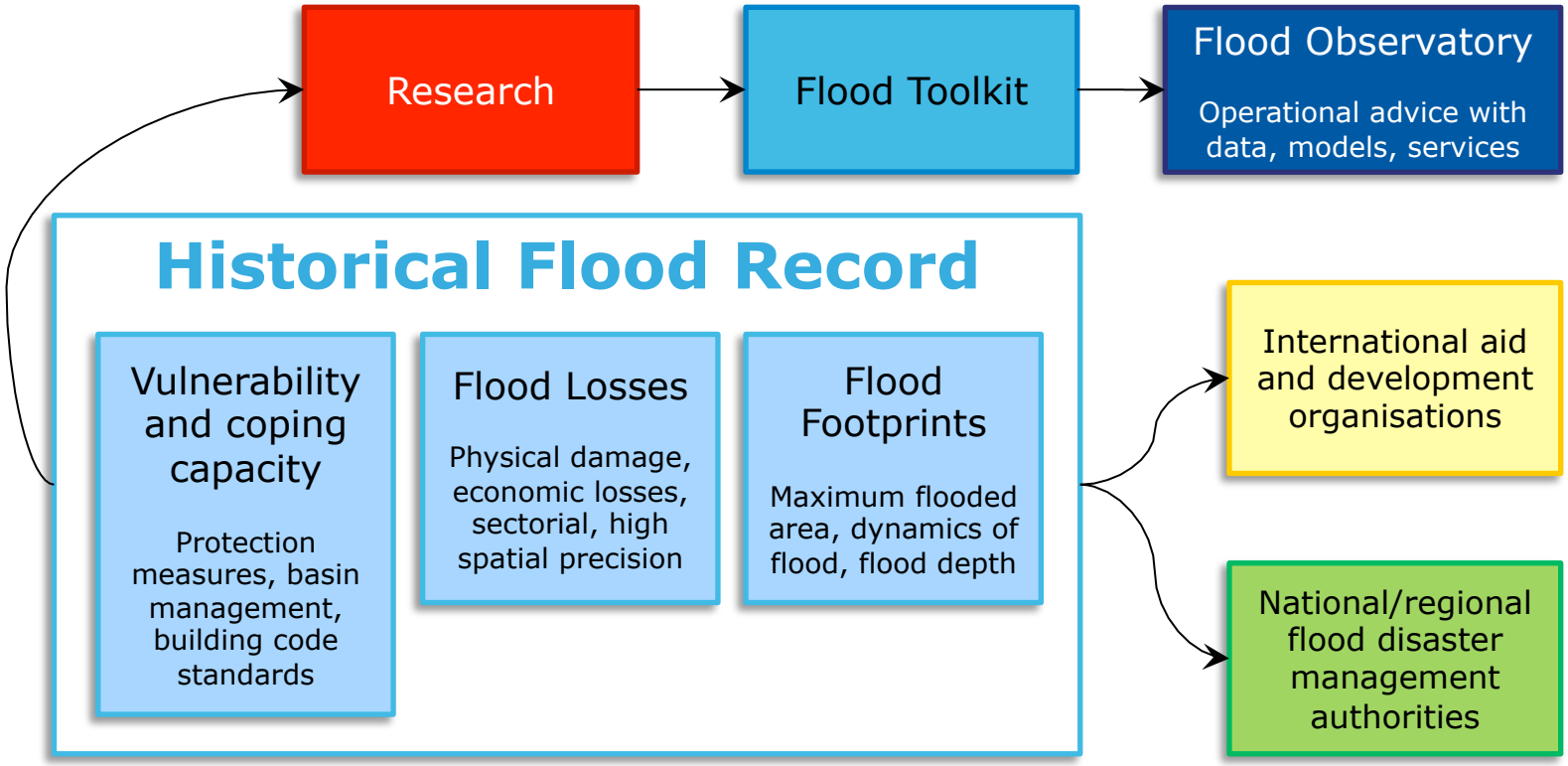


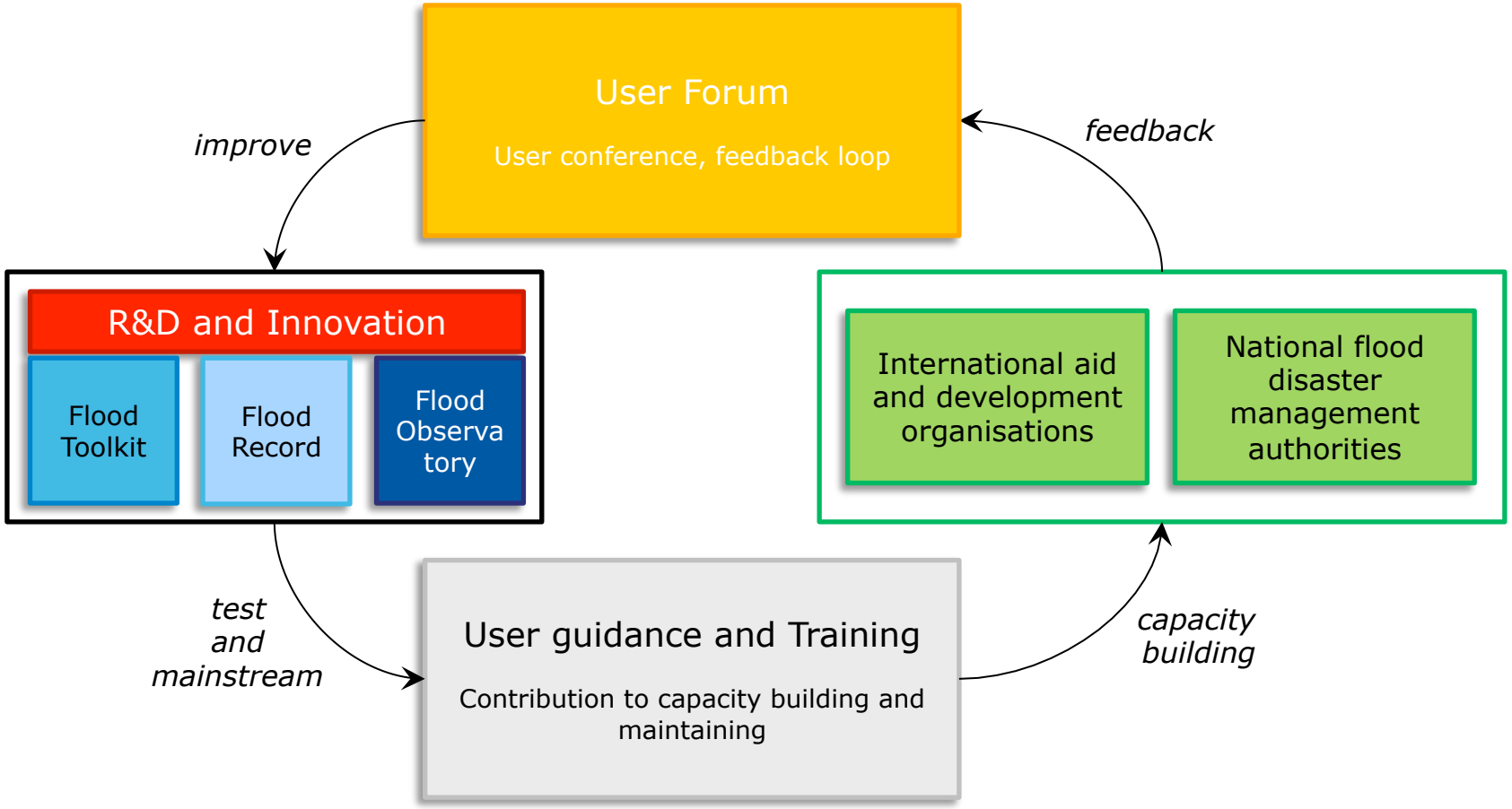
Core components




Global Flood Observatory
Forecasting centres
10-30 day forecasts
Observation centres
Flood alerts
Mid-resolution flood maps
Satellite mapping centres
High resolution flood maps
Operational centres
Flood losses assessment
Flood Toolkit
Data, models, services
Flood Record
Losses, hydrological data, maps
International aid and development organisations
National flood disaster management authorities


Flood Toolbox
Assimilation
Satellite data in forecasts
Validation
Of forecasts with satellite observations
Common data
Exposure, flood protection, DEM
Flood alerts
Calibration for local and global context
Risk
Risk assessment methodologies
Standards
Visualization
Uncertainty
Impact scale
Flood mapping
Flood impact assessment
Research & Development
From prototypes to operations
Flood Record
Losses, hydrological data, maps
Flood Observatory
Operational advice with data, models, services
User guidance
Capacity building and maintaining
International aid and development organisations
National flood disaster management authorities


Research
Flood Toolkit
Flood Observatory
Operational advice with data, models, services
Historical Flood Record
Vulnerability and coping capacity
Protection measures, basin management, building code standards
Flood Losses
Physical damage, economic losses, sectorial, high spatial precision
Flood Footprints
Maximum flooded area, dynamics of flood, flood depth
International aid and development organisations
National/regional flood disaster management authorities


User Forum
User conference, feedback loop
improve
feedback
R&D and Innovation
Flood Toolkit
Flood Record
Flood Observatory
International aid and development organisations
National flood disaster management authorities
test and mainstream
User guidance and Training
Contribution to capacity building and maintaining
capacity building