World Meteorological Organization

Weather • Climate • Water

Climate Services Toolkit

Summary of discussions

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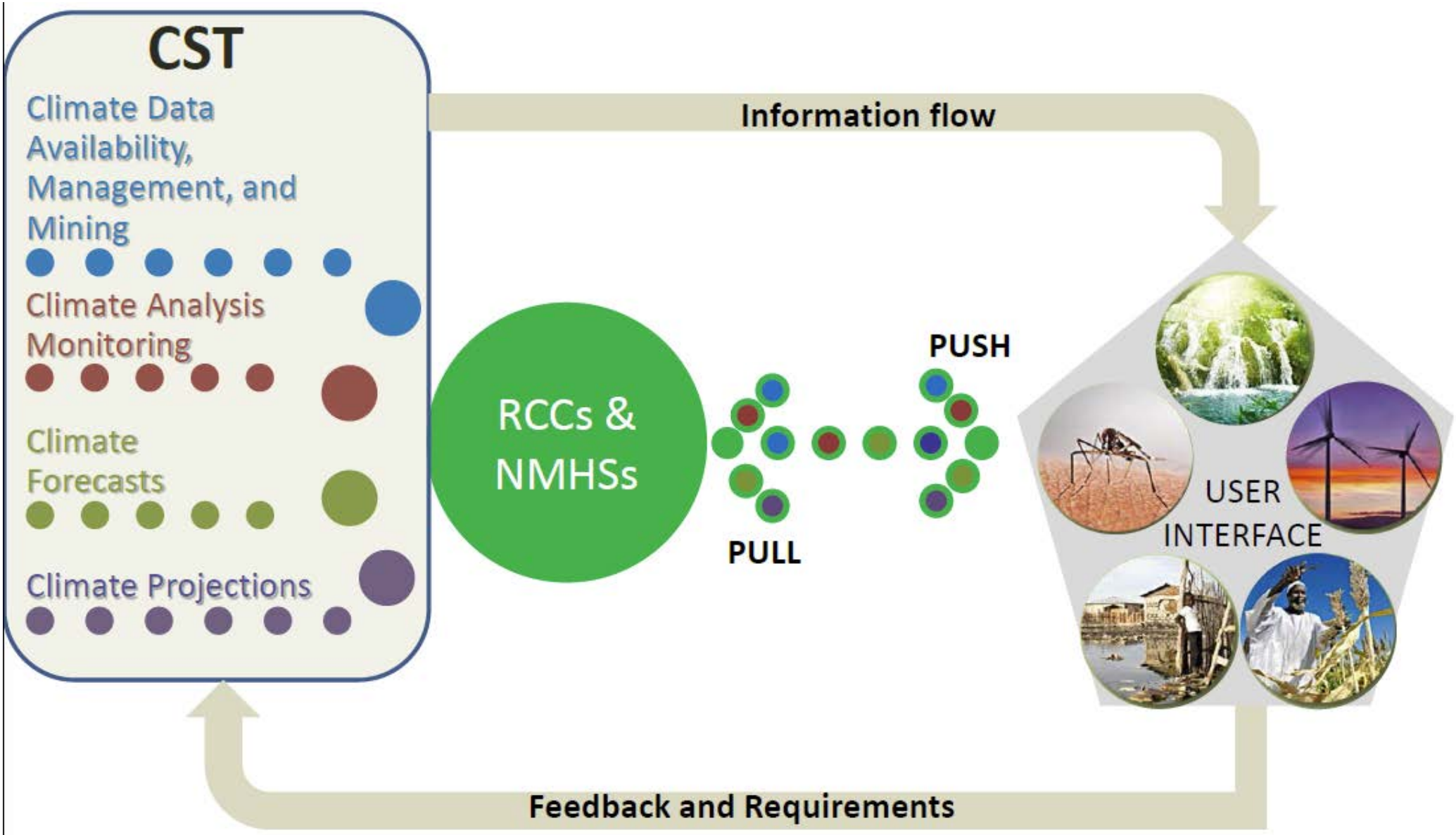
Climate Services Toolkit Features and Functions



CST Objectives

- To ensure that climate-sensitive sectors in any country have access to the most up-to-date, reliable and consistent climate information and products that meet their basic needs
- To provide a conduit for technology transfer to developing countries, enabling their access to the latest methods, techniques and information required for CSIS activities and products
- To facilitate climate services standards in effectiveness, consistency and quality for the Regional Climate Centers (RCCs) and National Meteorological and Hydrological Services (NMHSs)

Scope

- Data management tools – including:
  - Data portal for access to and analysis of observations and GCM outputs
  - Database management tool for quality control and simple manipulation of data
- Climate analysis tool for diagnostic analyses
- Climate monitoring tools – for calculation of anomalies, percentiles, return periods.
- Forecasting, downscaling and verification tools - for statistical and MOS Models, and with flexibility to interface to impacts models.

CST Requirements (1/2)

- Documented **best practices** – to ensure that tools are based upon refereed scientific principles and recognized methodologies.
- **Support** – to ensure the users of the tools need to have the expertise to operate the tools properly, and interpret the outputs correctly.
  - Training manuals and certified training programs (workshops, and remote-learning);
  - Mechanisms for providing feedback.
- **Sustainability** – to provide guarantees of on-going maintenance of the tools so that they are not made obsolete by developments in computer systems, any bugs are fixed, and new features are introduced in response to identified needs.
- **Accessibility** – the tools should be easily available from the Internet and/or available on request upon a portable electronic medium.
- **Usable** outputs – the ability to save data, analytical results, and predictions in digital and graphical publication-quality formats.

CST Requirements (2/2)

- Multilingual user interfaces Easy-to-use
- Portable
- Offline or minimal bandwidth
- Free software or freeware
- Certification of trainers – although the tool developer is initially likely to play a primary, and possibly exclusive, role in conducting training programs, in the longer-term regional entities (e.g., RCCs) are likely to be well-placed to provide support and training for the tools.
  - Training-of-trainers programmes

Summary and Recommendations from break out discussions

- RA I – VI Africa and Europe

Summary and Recommendations from break out discussions: RA I – VI (1/3)

Scope

- The toolkit should facilitate basic analysis and post processing of climate data rather than the aspects of data mining.
- There is need to clarify the intended users of the toolkit; whether for RCCs and NHMSs or other user organizations?
  - The understanding reached by the group was that its meant for RCCs and NMHSs

Requirements

- Must have a user friendly interface
- Tools needed to convert standard RCCs and NMHSs product into for example rainfall distribution, risk of extremes, etc
  - Probability of seasonal total is the current product issued by the RCCs and NMHSs
- Possibility to develop thresholds for sector users i.e. Malaria prediction
- Toolkit should provide links to all the different basic tools available for climate monitoring and forecasting
  - This is to reduce the time it takes to hunt around the web for potential tools

Summary and Recommendations from break out discussions: RA I – VI (2/3)

- Flexibility to be standalone or a web-based tool and ability to download data
  - Web-based to create flexibility to do computations on the online and only download your output rather than the raw data, i.e. NOAA
- Supply the RCCs and NMHSs with a static library of currently available data and that will leave the countries and the centres with only a small chunk of data to download on a regular basis as a measure to deal internet limitations.
- Different levels of tools for different categories of the Met Services (4 Cats)
- Training tool for ensemble analysis to introduce the idea what is behind the forecast
- Tutorial(s) should be embedded within the toolkit

Summary and Recommendations from break out discussions: RA I – VI (3/3)

- Data portal similar to that of the IRI data library that will point to different locations of data but not necessary host the data itself
  - Must make flexibility to use a region of interest rather to download the entire dataset available, which might a huge dataset
  - Ability to allow downscaling of model data and comparison with empirical algorithms such as FACT-FIT and JMA (i.e. iTacs, Climat View, etc)
- Ability to assimilate GPCs outputs
- Ability to compute statistical outputs like a weather generator, to produce products to input into impact models

Summary and Recommendations from break out discussions

- RA II – V Asia and South-West Pacific

Summary and Recommendations from break out discussions: RA II – V (1/2)

Scope:

- Put in details the Climate analysis tool used
  - Regression
  - CCA
  - PCA
  - Time series analysis
- Include the analysis provided in different sources, e.g. in the Climate Diagnostic Center (NOAA), KNMI
- Tool to change the temporal and spatial resolution for better interface of the models
- Tools must be simple

Summary and Recommendations from break out discussions: RA II – V (2/2)

Requirements

- Tools must be sustainable to expand users
- Simplest integration of different aspects of climate services toolkit from data to model running to visualization
- Standardization
- Self training modules
- Preparing batch programs (script files)
- "Customization" allows users to save pre-sets steps/ batch programs
- Provisions for automatic updating of climate data

Summary and Recommendations from break out discussions

- RA III – IV North America, Central America, Caribbean and South America

Summary and Recommendations from break out discussions: RA III– IV (1/2)

Objectives

- Define the users of this tool (reword object one to clarify target to clearly show that target is the NMHSs.
- Password protected toolkit to ensure access is restricted to NMHSs

Scope

- Should include appropriate display and geo-referencing tools software. Eg. GIS, GRADS

Summary and Recommendations from break out discussions: RA III– IV (2/2)

Requirements

- Validation/authentication of tools - piloted to test performance with known result (validated and well documented)
- Interface should be user friendly and intuitive… (Common sense)
- Emphasis on tools required for predictions
- Recommended open source software preferably (version control)
- Institutional commitment for software management
- Appathon - time frame to make an application out of a given data set or software
- Both face to face and virtual training programs

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Thank You

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