

R&D Technical Summary FD2314/TS

Position Review of Data and Information Issues within Flood and Coastal Defence

Background to R&D project

Although data underpins the management decisions to support all aspects of Flood and Coastal Management (FCM), issues surrounding 'data' are generally addressed as part of another subject (project appraisal, flood forecasting etc.). This study has arisen from a previous Defra/Agency research (Overview of Data Management Issues in Flood and Coastal Defence -W5G-007). It looks at data as a central item with the purpose to understand the efficiency of current data and information practices and what opportunities exist to improve the flood and coastal defence process through better data management. Focussing specifically on flood issues (fluvial, estuarine and coastal), the output of the project is to determine where limitations can be matched with quick fixes and improved uptake of ongoing research and initiatives. In addition this project aims to reflect and challenge new thought processes on this topic area, to support and promote policy development, implementation and operations, taking full account of existing data collection programmes and archives.

Results of R&D project

The key findings of the project focus upon the five key principles of data management such as data understanding, roles and responsibilities, processes and procedures, enabling technologies and audit.

Data Understanding: To improve the supply of data to support FCM decision making, an ontology of FCM data needs to be determined. Clearer communication is required on the needs of the FCM community and to help this, an ontology could be developed to map responsibilities and initiatives that are being undertaken to improve FCM data management.

Roles and Responsibilities: There needs to be a distinct improvement in encouraging better engagement of wider stakeholders in FCM. The study recommends encouraging partnerships with local stakeholders when managing datasets. Defra/Agency can be more proactive and clear in how best to combine resources (internally and externally) when undertaking consultation and information dissemination. Wherever possible, the Agency/Defra need to review regularly existing mechanisms of involving stakeholders in data collection to assist local communities, rather than setting up duplicatory processes or systems that do not provide a service to local communities in times of need. Staff in all Operating Authorities should be informed that they have a "duty of care" to data and protocols should be established for the retention of data to ensure the preservation of valuable records.

Process and Procedures: The key conclusion regarding process and procedures centre on data standards. In particular there are gaps on which standards are used, communicating this to the FCM community and supporting compliance to these standards. The wider FCM community is looking towards metadata standards based on ISO19115 and Dublin Core (e.g. e-GIF). As the FCM community is primarily dealing with geo-spatial data, the FCM community should look to develop, maintain and service a FCM profile of ISO19115. The FCM community should also embrace the diversity of data standards existing within FCM and to manage this establish a registry of FCM data standards and the associated mapping between these standards. This includes common dictionaries for terminology.

Enabling Technology: The FCM community is generally very quick to look at new technology and (lack of uptake) of new technology is a minor issue, not currently limiting FCM progress. The UK is generally a leader in all aspects of the application of new technology to FCM. This includes enabling technology for data collection, processing and dissemination. What is often the limiting factor is the integration between 'requirements' and 'technology' to ensure the appropriate uptake and use of technology. Recommendations are therefore based on minimizing this gap through improved communication of technology development plans and to make explicit (e.g. provide guidelines) on the integration of the technology with FCM process workflows.

Audit: There is no mechanism in place to regularly appraise the data needs of FCM. There is also a requirement to ensure a continual feedback from current FCM initiatives (eg: PAMS) to others such as the NFDMS. The benefits of data collections also need to be appraised alongside data needs as this ultimately appraises its value. It is recommended that a simple screening tool is developed that takes as input 'what is known' about a dataset and from

this infer a statement of its value/management needs.

The FCM community does not have an effective learning mechanism in place to understand what information is valuable and what information is not. The existing Agency Knowledge Management Strategy does provide a framework from which to prepare a FCM specific document.

Some of the recommendations are summarised below:

- Develop an ontology for FCM Data Management activities (research and operation) covering such facets as “what, where, who, why” and serve this to the FCM community.
- Develop, manage and serve to the FCM community an ontology of FCM data that includes facets on what the data is, data purpose and responsibilities for maintenance and ownership. This could be related/linked to the above ontology.
- Assign responsibility for improved (internal and external) communication of existing practices within FCM (Defra/Agency).
- Clarify (internal and external) contact points for FCM responsibilities within Defra/Agency.
- Establish an ISO-19135 compliant FCM data standards registry. This can be regarded as going hand in hand with the recommendation under ‘Information’ for an ontology of FCM activities and take account of e-GIF registries.
- Introduce standard text that can be included into all Terms of Reference for Defra/Agency projects (NCPMS or research contracts) to ensure standardisation of data collected, stored and disseminated.
- Look to develop a national database on post event results for use by researchers and operational staff for studies on model performance and flood warning system performance.
- Adopt simple framework used in this study to ‘audit’ data and information issues related to FCM projects (see Appendix A to D as a series of examples).
- Research is required to develop and test screening tools to appraise data value.

R&D Outputs and their Use

The project produced an R&D Technical Report (TR) and a Project Report (PR). The TR is of value to FCM policy makers and data managers from outside government. PR is of internal value to data managers, engineers and scientists involved in FCM. The R&D Technical Report contains the results of the project and proposals for future research or actions that may be taken forward in the short to medium term. The Project Report (PR) represents a non-contracted deliverable to the Client. The purpose of this report is to provide an overview and write up of outcomes of the 24 April 2003 Workshop; a listing of relevant initiatives/projects/research being reviewed within the study for update, and the 6 draft Position Papers that helped to steer the production of the TR report.

This R&D Technical Summary relates to R&D Project FD2314 and the following R&D output:

R&D Technical Report FD2314/TR. FD2314 - Position Review of Data and Information Issues within Flood and Coastal Defence – Technical Record: FD2314/TR Published March 2004.

R&D Project Record FD2314/PR – FD2314 - Position Review of Data and Information Issues within Flood and Coastal Defence - Project Record: FD2314/PR – Published March 2004.

Publication Internal Status: Released Internally External Status: Released to Public Domain

Project Manager: Dr. Suresh Surendran, Risk Analyst, Environmental Policy– Risk & Forecasting, Environment Agency, Reading, Berks RG1 8DQ.

Research Contractor: Jonathan McCue, Atkins, Thomson House, Birchwood Science Park, Warrington, WA3 6AT.

The above outputs may be downloaded from the Defra/EA R&D Programme website (<http://www.defra.gov.uk/environ/fcd/research>), use the search tool located on the project information and publications page. Copies are held by all EA Regional Information Centres or they can be purchased, contact the The Environment Agency’s National Customer Contact Centre by emailing enquiries@environment-agency.gov.uk or by telephoning 08708 506506.

© Crown copyright - Defra, Flood Management, Area 3D Ergon House, Horseferry Road, London SW1P 2AL Tel: (+44) 20 7238 5957 Fax: (+44) 20 7238 6187