



A global database of flood-protection levees on river deltas (openDELvE)

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Global flood modelling requires standardised global flood-protection levee datasets. Current datasets, however, are generally confined to territorial boundaries (national datasets) and are scarcely made public. Here we report on our effort to collect and standardise flood-protection levee data for river deltas from various sources to create a single, open source and FAIR-aligned global dynamic evolving river levee data environment (openDELvE).

openDELvE aggregates data from national databases (including the USACE National Levee Database, and the UK EA Asset Information Management System, amongst others) as well as data collected from reports, maps, and satellite imagery. We report primarily the land areas that the levees have been designed to protect, and where additional data is available, the location of levees and unified attributes. openDELvE currently contains 1601 mapped leveed area polygons distributed over 152 deltas, covering 28% of globally defined delta area. Out of the 152 deltas, which cover a total delta area of 239,043 km², the levees registered in the database protect a land area of 42,342 km². Additionally, more extensive data has been collected from a selection of freely accessible public national databases (mostly the UK and USA, and some of Australia) spanning 5,089 km of levees with additional unified attributes (e.g. levee height, crest width, construction material), and a semi-automated process is being used to extend and develop this layer.

The data is published aligned to FAIR-standards and is open-source, with an interactive viewing platform to supplement the data which is targeted for use in global river delta modelling and research. The viewing platform for the database incorporates a community-driven revision tool to encourage ongoing improvement and refinement of delta levee data, which can be extended to future projects as required.