Software development processes in radar algorithm development at the DWD

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When Deutscher Wetterdienst (DWD) initiated the project Radarmaßnahmen in 2010 to use the extended scan information from the exchanged German weather radar network for quality assurance, hydrometeor classification and quantitative precipitation estimation (Quality HyPE), a software component task was scheduled to design and implement a common software framework as environment for all new radar algorithm developments. The past four years have been used to develop the software framework POLARA, which is intended to support, ease and standardize radar specific algorithm development complemented by an environment for operational real time calculation.

POLARA in its current state consists of a development environment with common libraries for widely used functions like reading, writing or logging and an installation environment to schedule, process and monitor a configured subset of the existing algorithms with real time data. The C++ sources are revision controlled in Perforce streams which are divided in stabilized release streams and in experimental development streams. We established development processes to work in a defined way from programming in an Eclipse IDE with Perforce connection and a given toolchain for building, testing and documenting. Release management processes define how and when new releases are installed or how updating of existing POLARA installations works. A continuous integration system covers each stream by a set of building and testing jobs. The whole system covers the development from experimental implementations to operational monitoring and minimizes the effort to get a new algorithm in a productive and monitored state.

This contribution will describe the framework, the runtime environment and the linkage of all supporting tools for revision control, branching, continuous integration, releases and monitoring.