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EOLDAS: An Earth Observation Land Data Assimilation System

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EOLDAS (Earth Observation Land Data Assimilation System) is an ESA funded project to implement a prototype scheme to derive physically consistent estimates of surface properties from multiple space borne instruments. Since the project is the first stage of longer-term ESA efforts to more fully utilise data assimilation in the exploitation of EO data, this work concentrates on system design and definition, attempting to make the scheme as generic as possible.

The current scheme uses a zero-order process model (alternatively an empirical LAI trajectory model) to more fully understand issues in land surface DA, the idea being to replace this with user-defined models of the expectation of biophysical parameter changes in future developments. That said, a zero-order model serves a useful purpose in abstracting issues associated with choice of DA methods from those arising from the use of any particular process model. It can also serve as a test-bed for demosntrating the power of combining measurements from different EO platforms.

An overview of the main issues in land surface DA are presented, along with examples of specific DA implementations on moderate resolution EO data by way of illustration.