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Approach 1

Update of Mingyue's work on ESA CCI, HILDA, GlobeCover2009

Transform ESA CCI, HILDA and GlobeCover2009 to same spatial resolution (dominant and fractional approach? sensitivity study?)

Merge ESA CCI data to 23 PFTs of GlobeCover2009Use HILDA decadal change rate data and expand them to yearly change rates

Apply HILDA yearly change rates to the GlobeCover2009 data to get a yearly changing GlobCover2009 data set(Problem: HILDA yearly change rate data only contains 6 land cover types, but the Globcover2009 contains 23 PFTs, so expanding yearly change rate data into 23 PFTs could be possible or apply for example change rate of forest to all forest PFTs).

Compare ESA CCI time series data to the new GlobeCover time series and do adjustments if necessary (Notice: ESA CCI data covers from 1992 to 2015, the expanded globcover2009 data covers from1900 to 2010).

Perform long-term climate hindcast simulation with the static GlobeCover2009 data set.

Perform long-term climate hindcast simulation with the new GlobeCover time series.

Approach 2

Use Extpar model to generate new external data set from he climate model based on HILDA and ESA CCI.

Perform long-term climate hindacst simulation based on the HILDA data.

Perform long-term climate hindcast simulation based on ESA CCI.

Other tasks:

Maybe inlcude data from climate model simulation with dynamical vegetation,

Maybe perform the vegetation simulation from the current data to get past time (Thomas Raddatz can give here more information).

Look at other research groups how they perform the data transformation, including temporal data reconstruction and land surface types reconstruction.

Read the literature on land surface data transformation, specially about HILDA data, how do people use it, the problem they met and how dis them solve them.