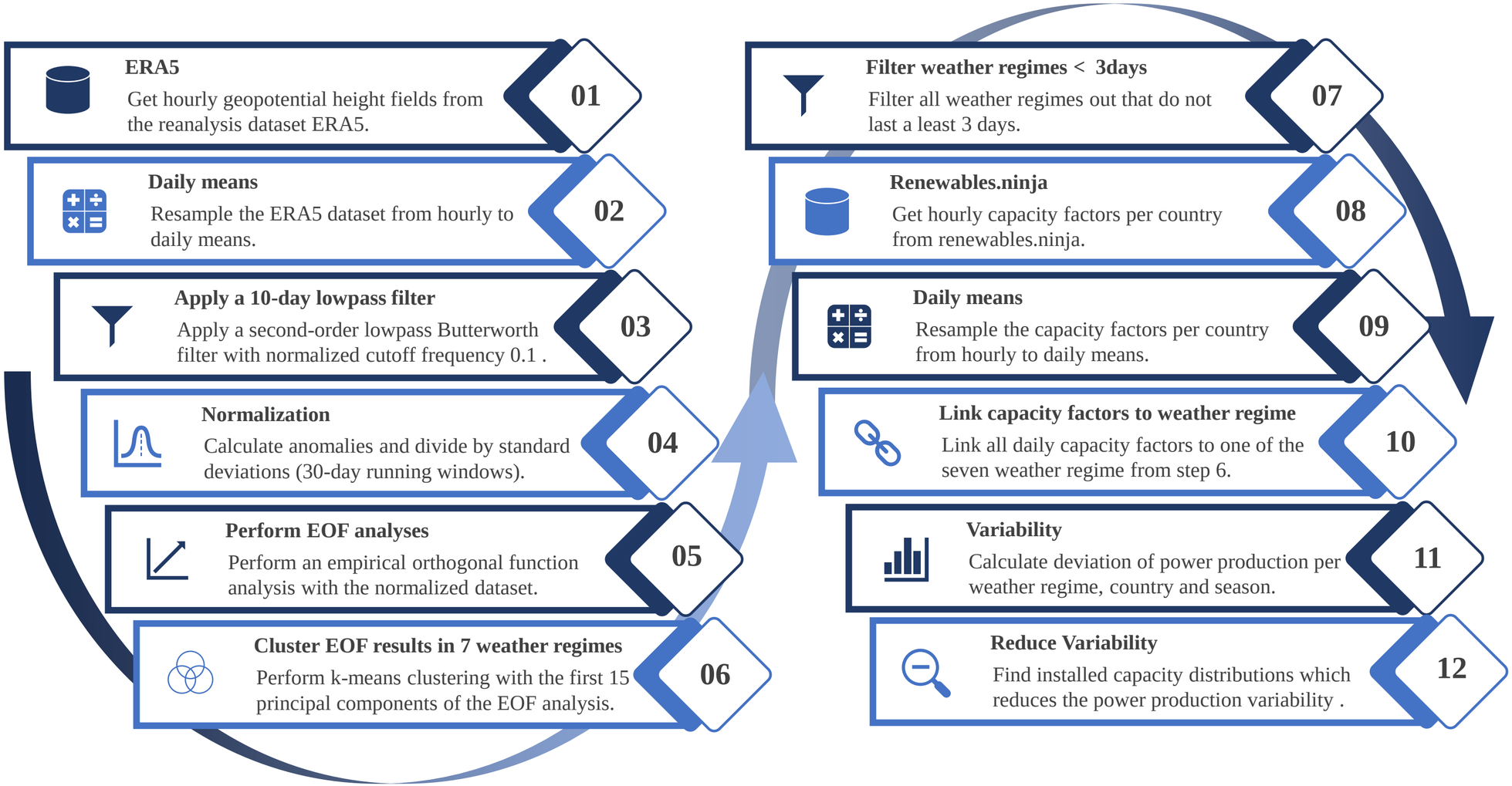
ERA5
Get hourly geopotential height fields from the reanalysis dataset ERA5.
01
Daily means
Resample the ERA5 dataset from hourly to daily means.
02
Apply a 10-day lowpass filter
Apply a second-order lowpass Butterworth filter with normalized cutoff frequency 0.1 .
03
Normalization
Calculate anomalies and divide by standard deviations (30-day running windows).
04
Perform EOF analyses
Perform an empirical orthogonal function analysis with the normalized dataset.
05
Cluster EOF results in 7 weather regimes
Perform k-means clustering with the first 15 principal components of the EOF analysis.
06
Filter weather regimes < 3days
Filter all weather regimes out that do not last a least 3 days.
07
Renewables.ninja
Get hourly capacity factors per country from renewables.ninja.
08
Daily means
Resample the capacity factors per country from hourly to daily means.
09
Link capacity factors to weather regime
Link all daily capacity factors to one of the seven weather regime from step 6.
10
Variability
Calculate deviation of power production per weather regime, country and season.
11
Reduce Variability
Find installed capacity distributions which reduces the power production variability .
12