

PCA using R

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R Session

The data used here are from the file **WG1AR5_AIISM_Datafiles.xlsx**, which is a spreadsheet version of “Annex II” of the IPCC AR5 WG I report, and can be downloaded from <http://www.ipcc-data.org/observ/index.html>. The data show the “radiative forcing” values (in Wm^2) of different controls of climate from 1750 to 2011 CE (Table AII.1.2). These controls include both natural (e.g. volcanoes, solar output) and anthropogenic (greenhouse gas) sources,

The aim of the analysis here is to use PCA

to examine the covariations among the different radiative forcing components, and, for example, to determine how many distinct trends there may be.

Different radiative forcing components are:

1. Anthropogenic
 1. Carbon Dioxide (CO_2)
 2. Other Greenhouse Gases (OtherGHG)
 3. Tropospheric Ozone (O_3 Tropos)
 4. Stratospheric Ozone (O_3 Stratos)
 5. Aerosol
 6. Land use Change (LUC)
 7. Stratospheric water vapor (H_2O Strat)
 8. Black Carbon in Snow (BCSnow)
 9. Contrails
2. Natural
 1. Solar (Solar Irradiance)
 2. Volcanic Eruption (Volcano)