2) Diagnosis of observations

Subjective analysis:
- originally: synoptic weather charts.
- assimilation of information from many sources (pattern recognition).
- advantages: human brain is good at it.
- disadvantages: time consuming; does not incorporate laws of physics; not on a regular grid.

Objective analysis:
- interpolate observations to a regular grid.
- link variables dynamically (hydrostatic balance).
- "first guess"---previous estimate.
  - observational increment.
  - analysis increment.
- weight analysis increment near observations.
- weight first guess in absence of observations.