

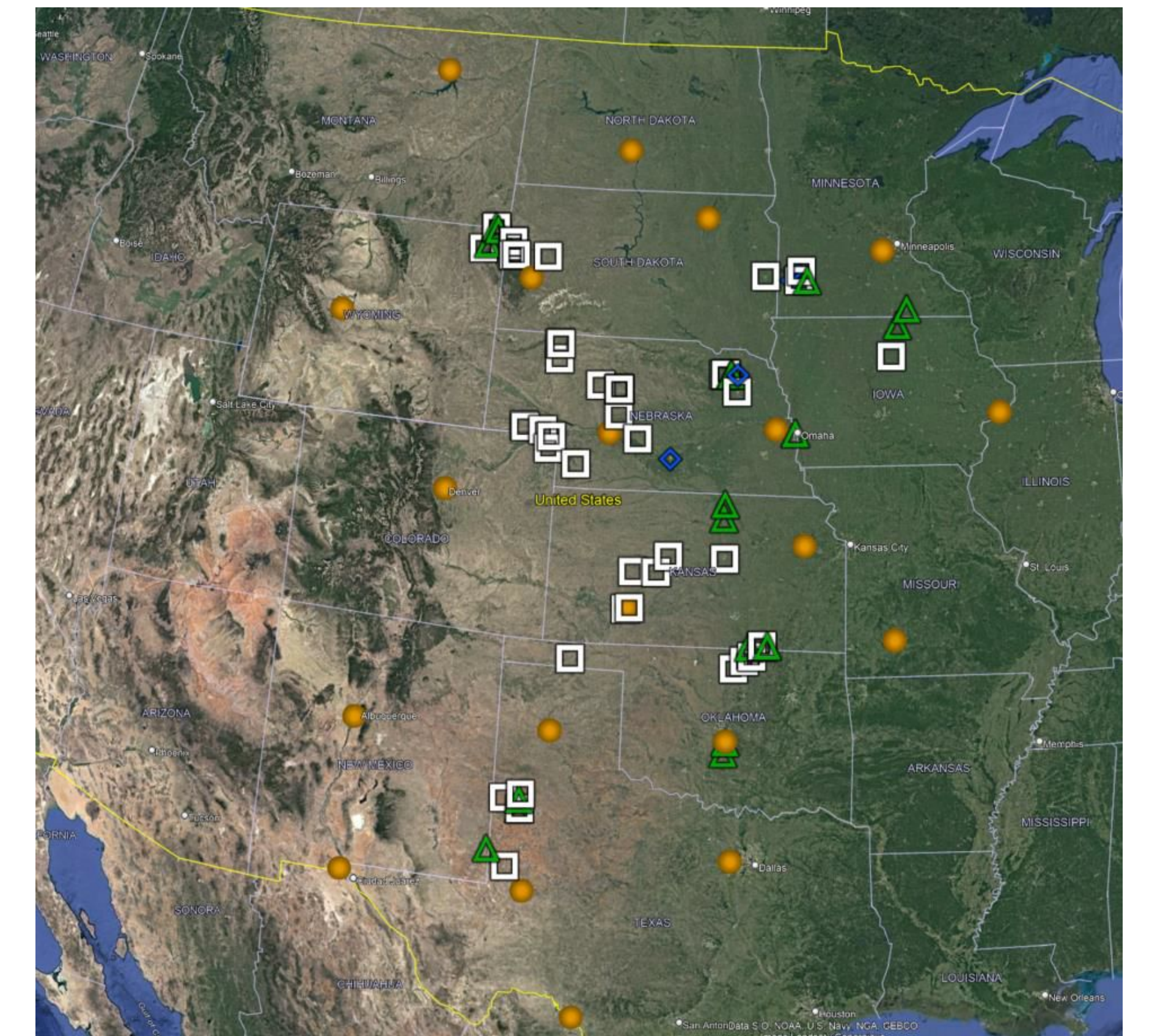
What are Sounding Composites

NCAR/EOL Sounding Composites are value-added datasets that take all of the research and operational sounding data (radiosondes, dropsondes, etc) relevant to a campaign and converts them to a common format (currently EOL Sounding Composite (ESC) format which is a columnar ASCII) and passes them through a common quality control process. Most projects have two composites developed, one with the data at their native vertical resolution and a second with the data at consistent interpolated vertical levels (e.g. 5mb or 50m).

History

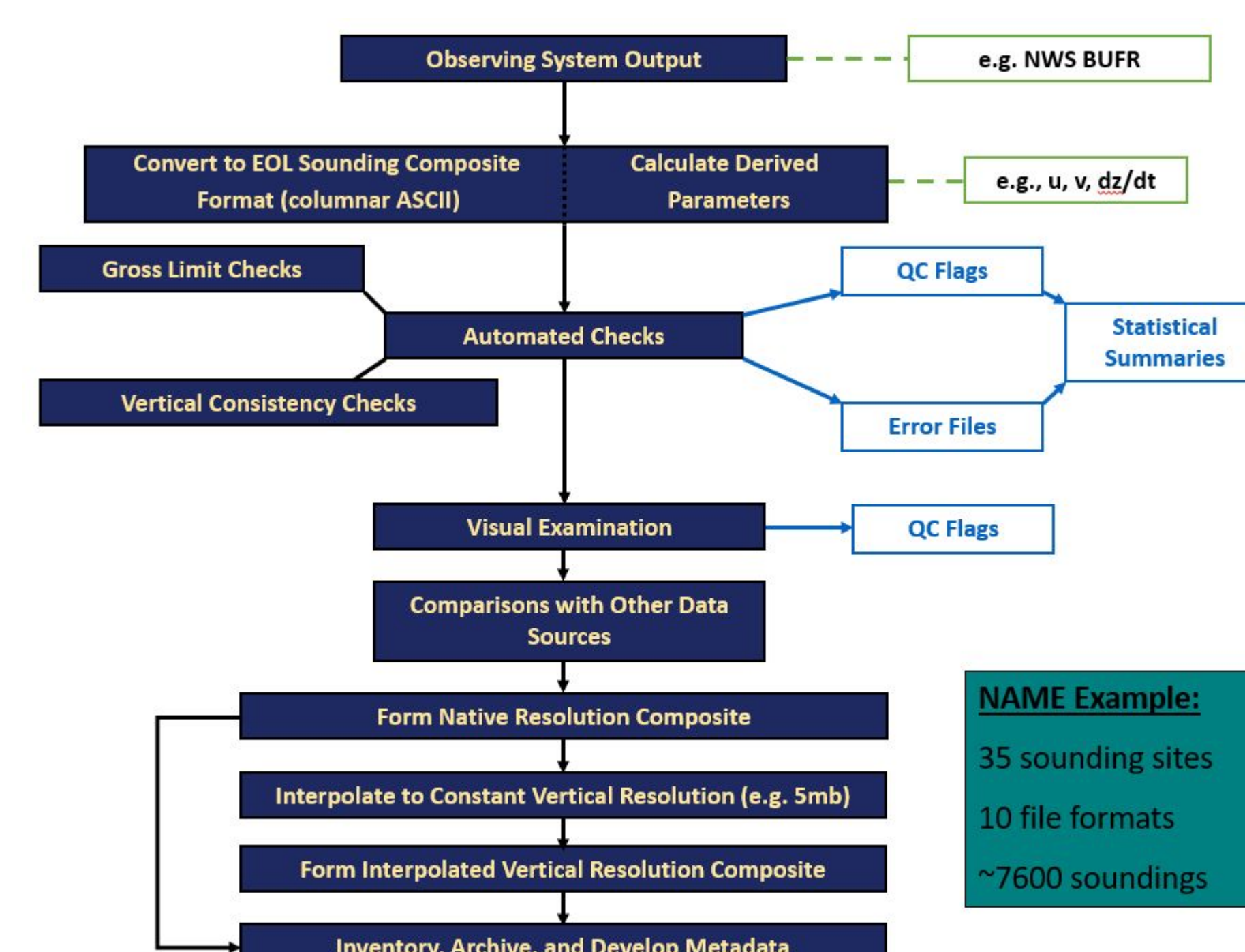
NCAR/EOL/DMS started developing sounding composites for the STORM-FEST campaign in 1992 and continues to this day with composites developed for CFACT, SWEX, TORUS-Lite, and WINTRE-MIX in the past year. Sounding composites have been developed for over 40 campaigns that have covered a wide variety of atmospheric science disciplines, including mid-latitude and tropical convection, tropical cyclones, winter storms, winds in complex terrain, and more. At right is an example sounding composite from the TORUS_2022 campaign. Why were they initially developed?

- Provides all sounding data for a campaign in a uniform format and passed through a common QC/QA process
- Prevents duplication of effort
- Makes the campaign sounding data more accessible and sustainable for long term usage
- Eases use for modeling applications



Development and Quality Control

After conversion to the EOL Sounding Composite format all soundings are passed through a multi-step QC/QA process that includes confirmation (to the extent possible) of metadata such as the release location and time, a series of automated gross limit and vertical consistency checks, and a visual examination. Data quality flags are applied to parameters at each vertical level of every sounding and these flags can be applied during both the automated and visual checks. Any major data quality issues are noted and discussed with the data provider.



As part of the QC process for the soundings coming from the 1992-3 TOGA_COARE program's extensive sounding network, NCAR/EOL/DMS developed XQC a tool that allows for viewing, zooming in for detailed examination, and the direct application of data quality flags to the sounding data files. It displays the sounding in a skew-T format with values colored based on the data quality flag (red for Bad and pink for Questionable). It also allows for making adjustments to the data quality flags applied by the automated QC checks.

