

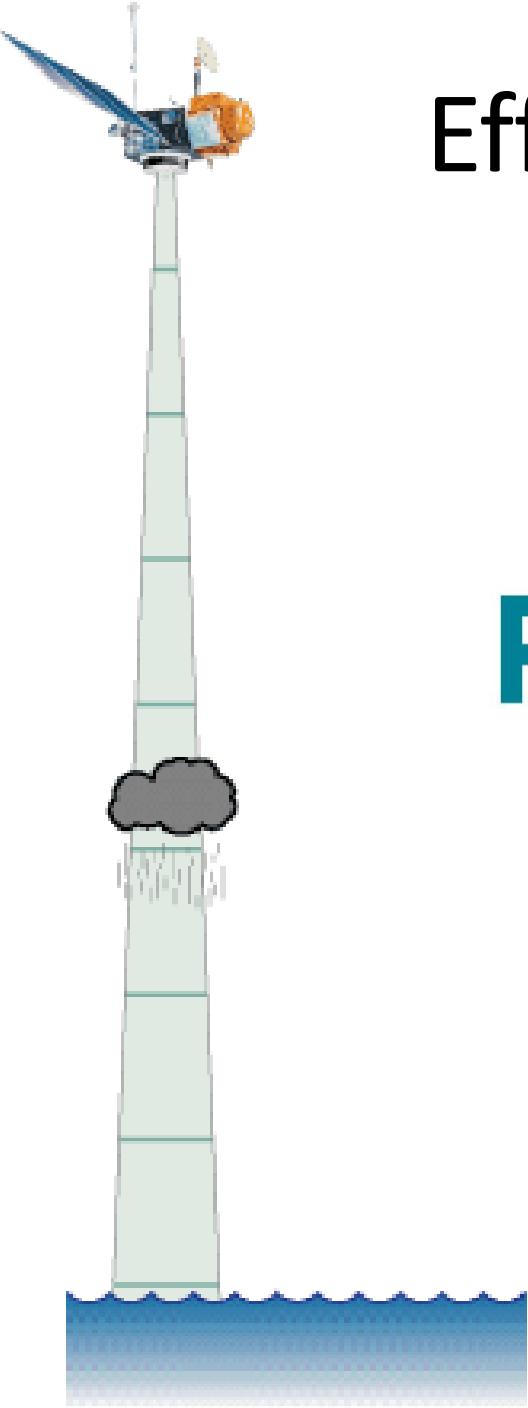
Effective Rain-Flagging

Graham Quartly

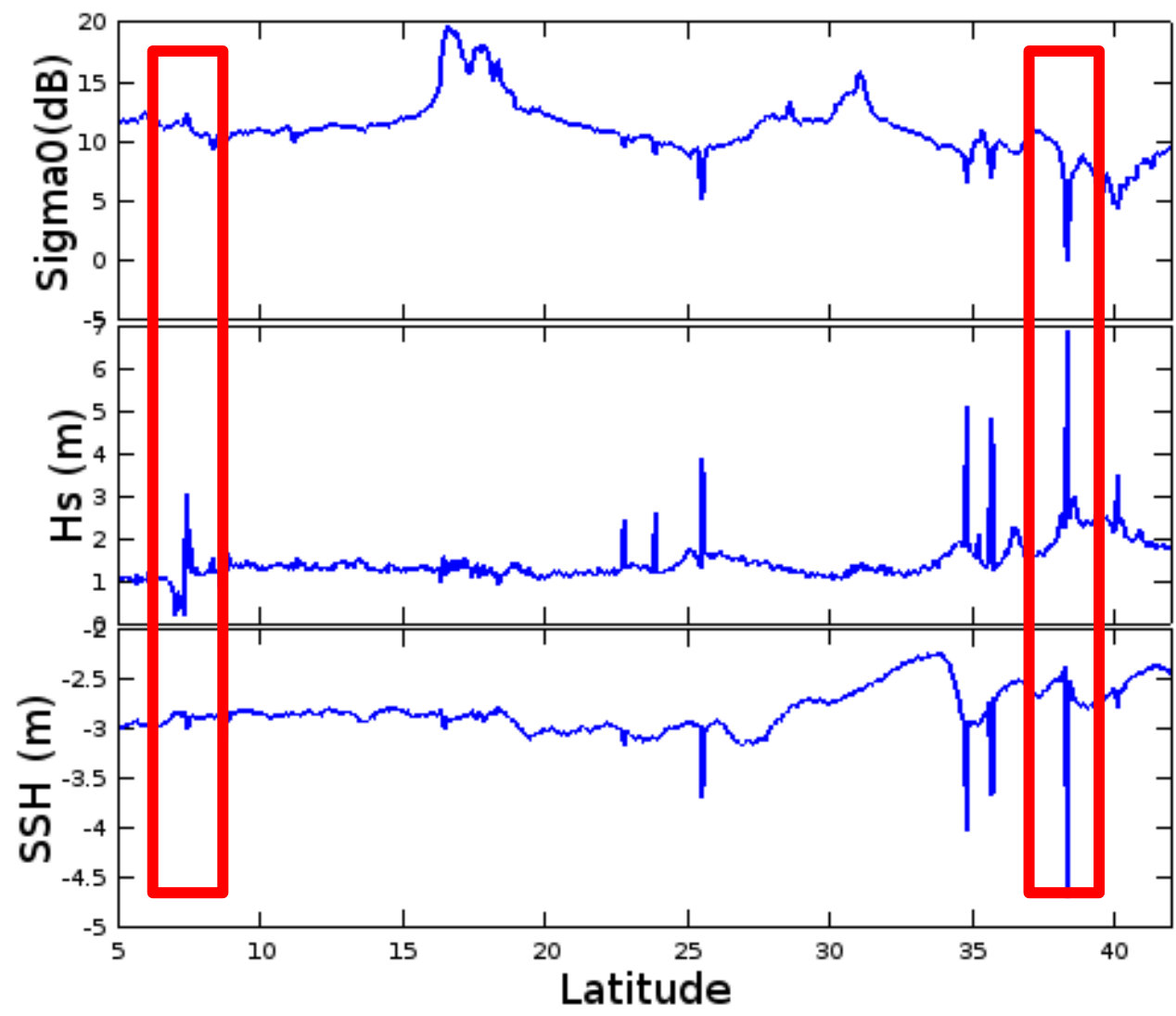
PML | Plymouth Marine
Laboratory

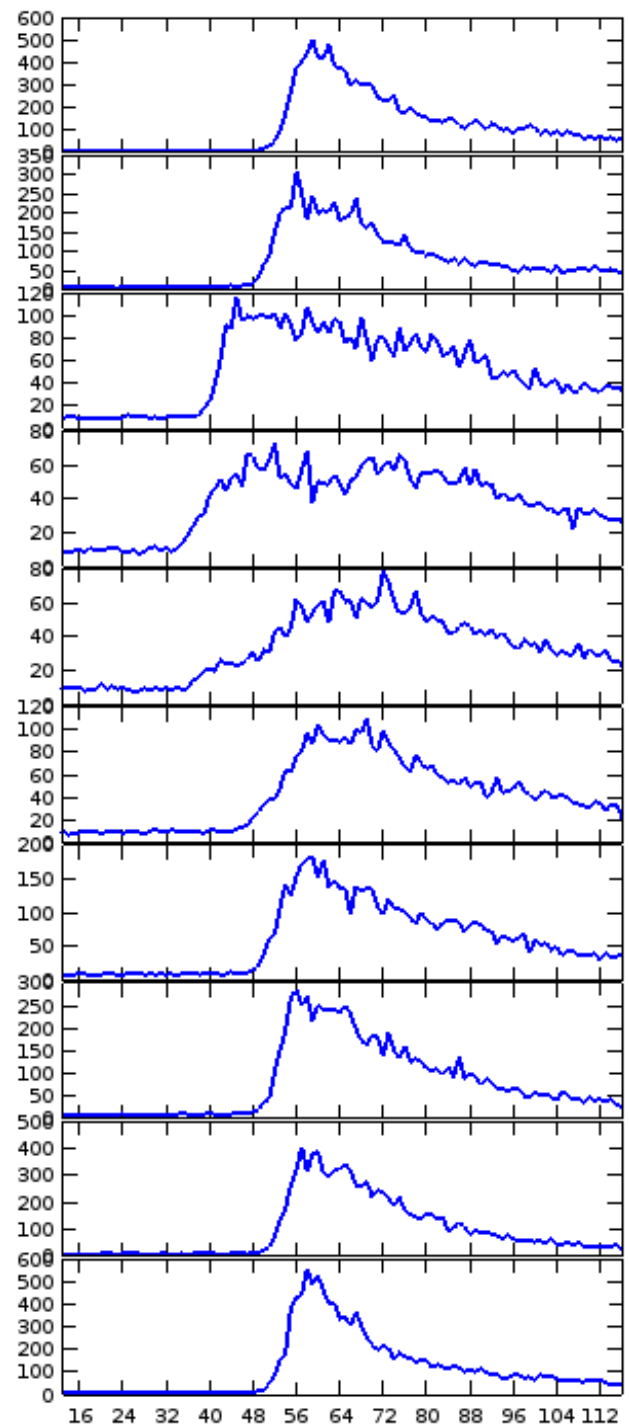
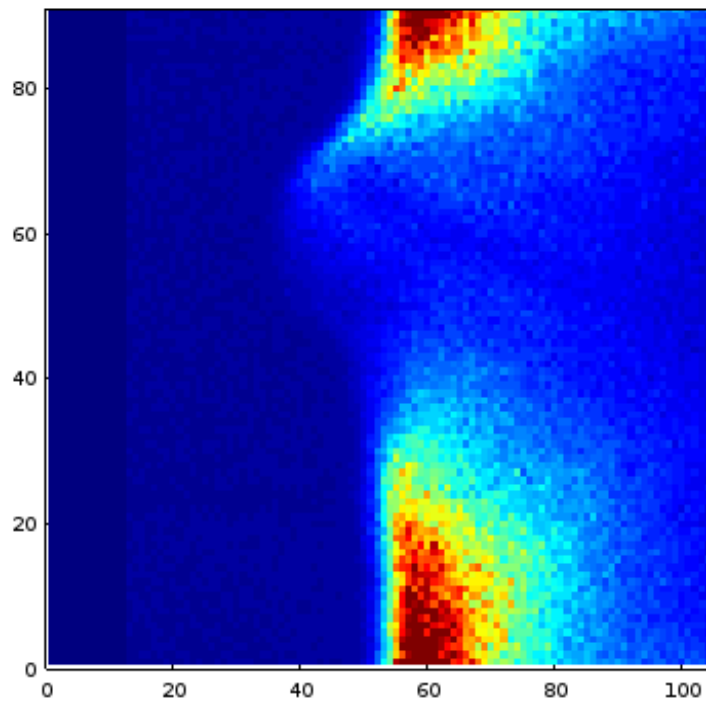
What do we want?

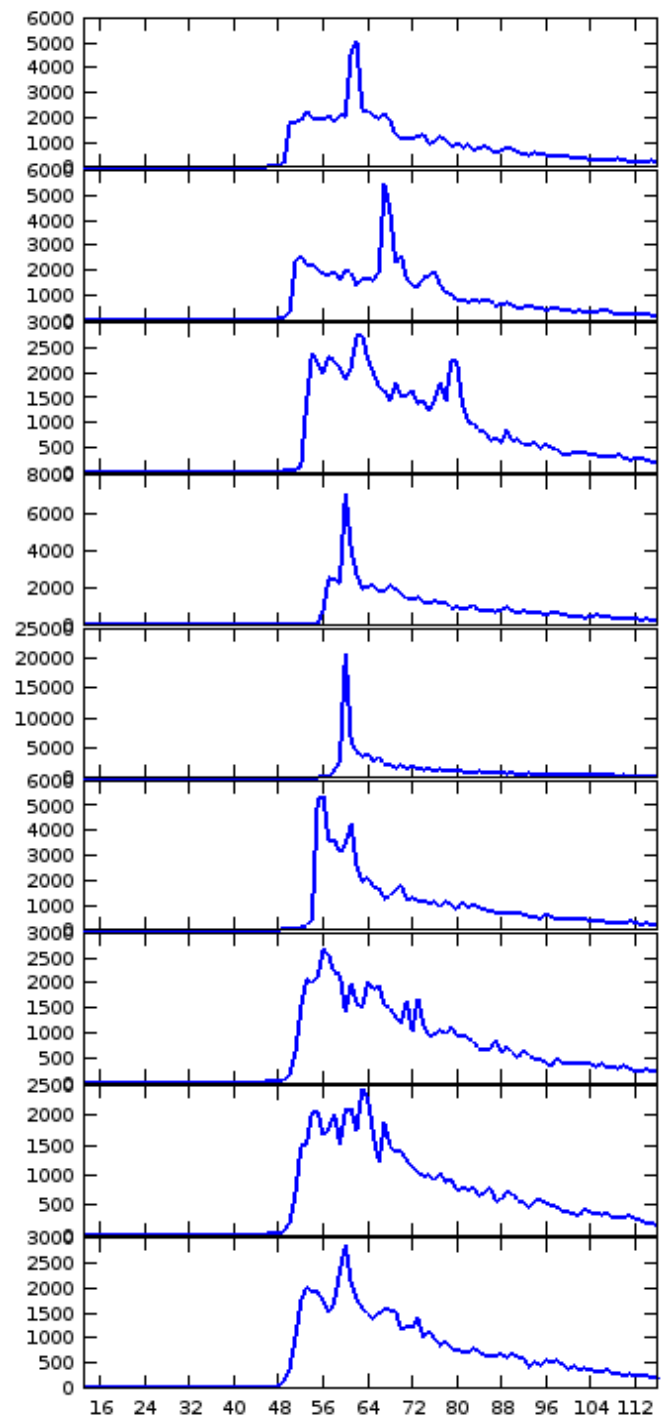
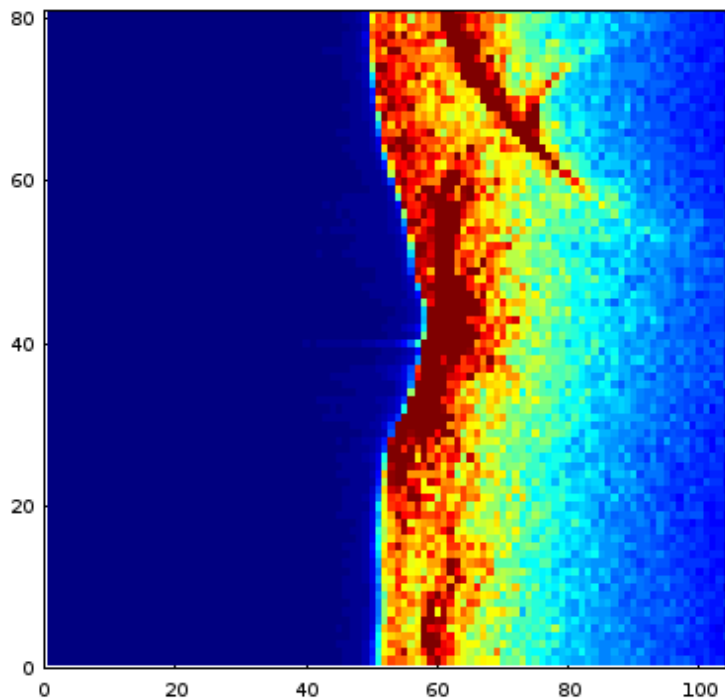
How will we know we've got it?



003/032: W. Pacific







Ideal flag

Not necessarily whole of rain cell / sigma0 bloom

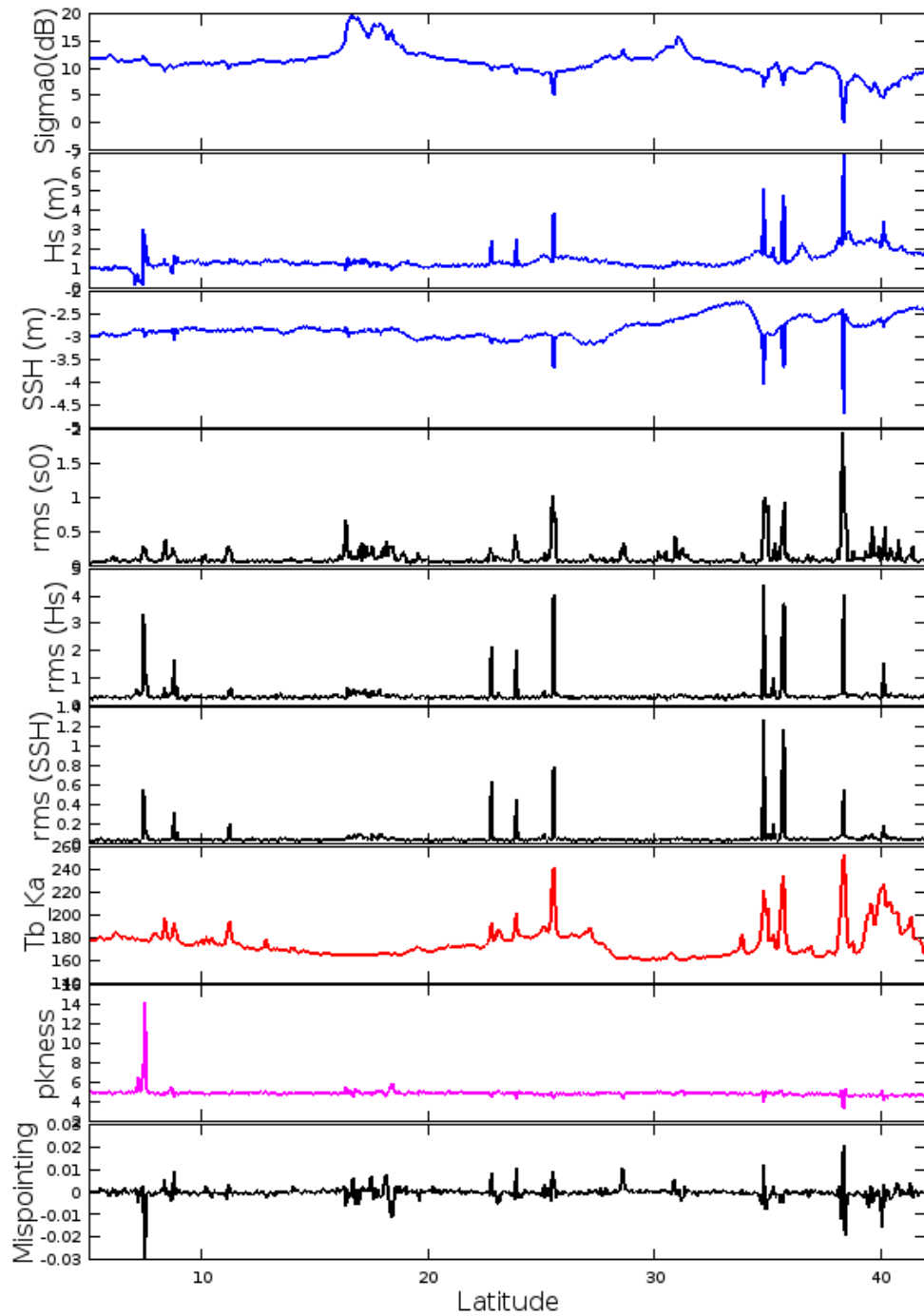
Implementable with "standard" parameters

1 Hz

Simple (no 5th order polynomials or complex multi-branch rule)

Not flag excessive points

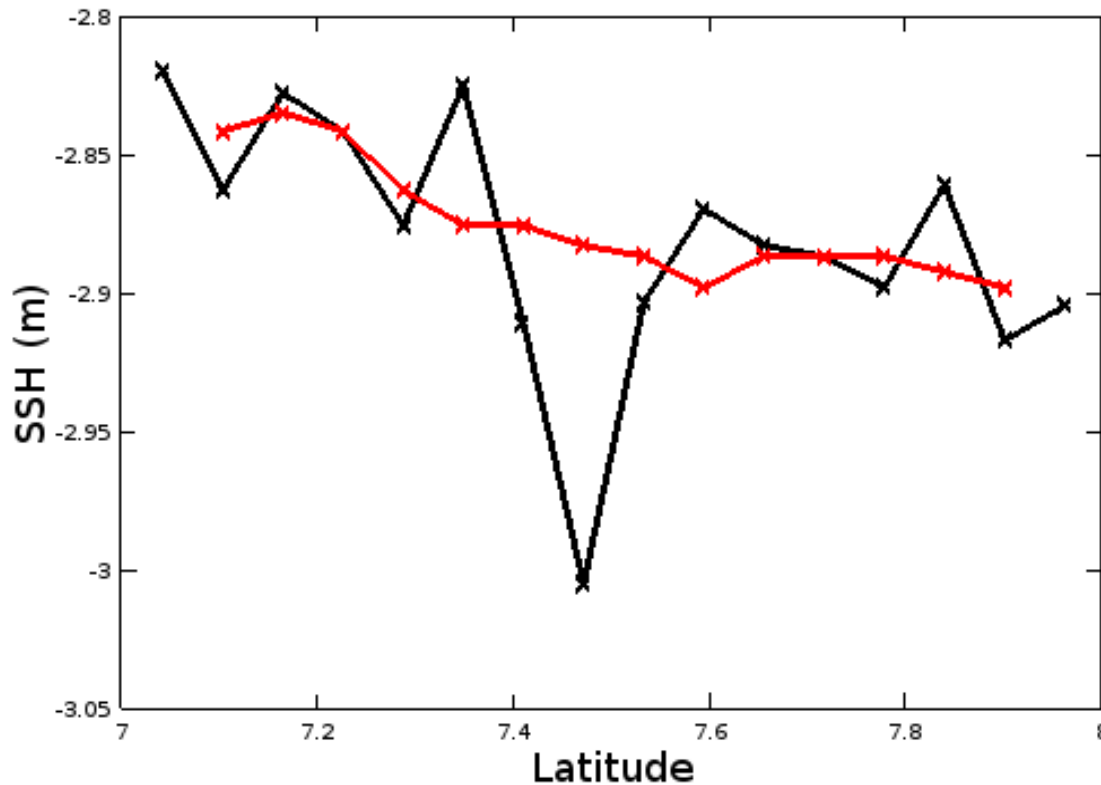
Ideally provide altimeter data in all realms



How to assess?

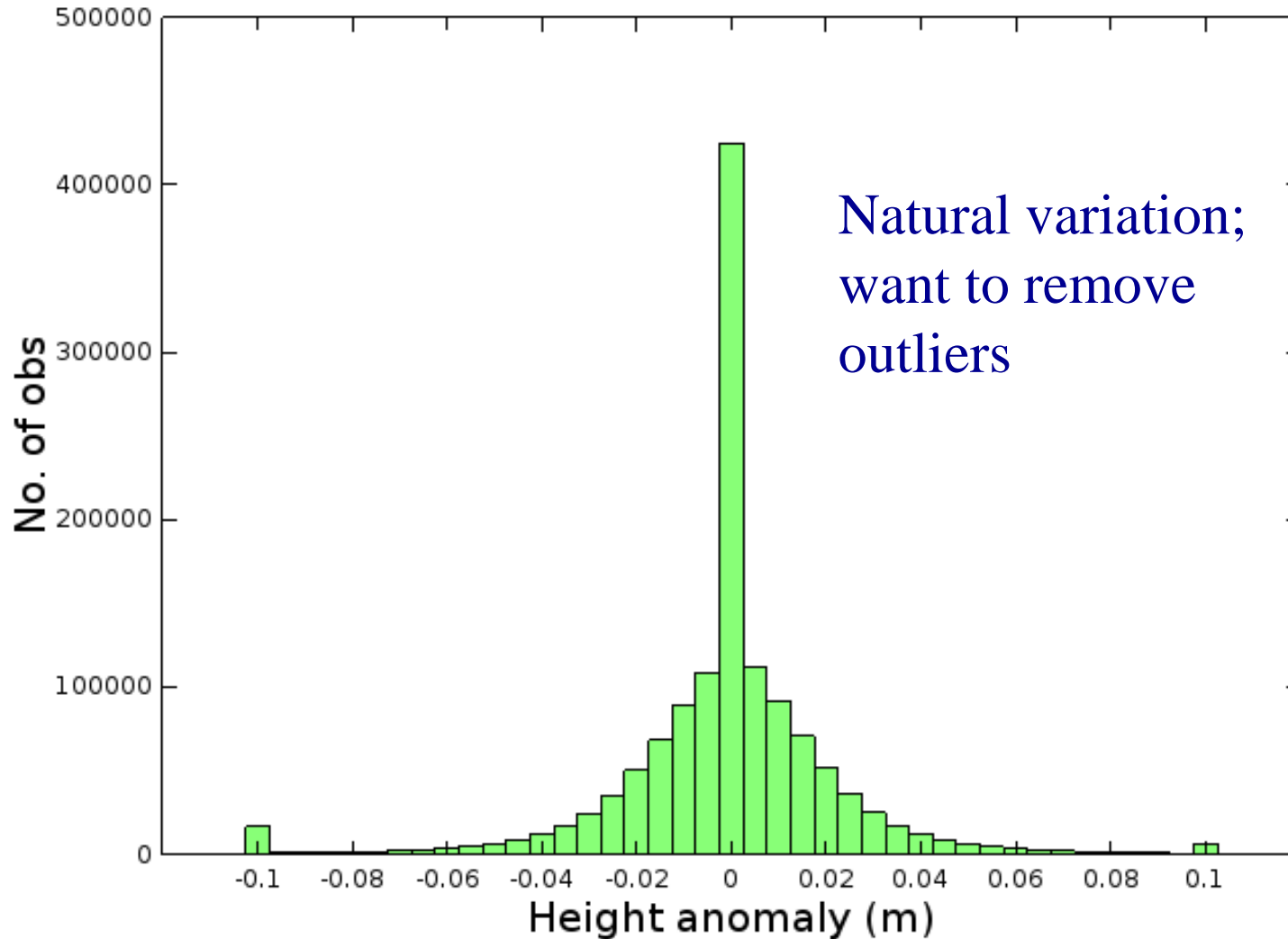
Not to find rain, but bad data

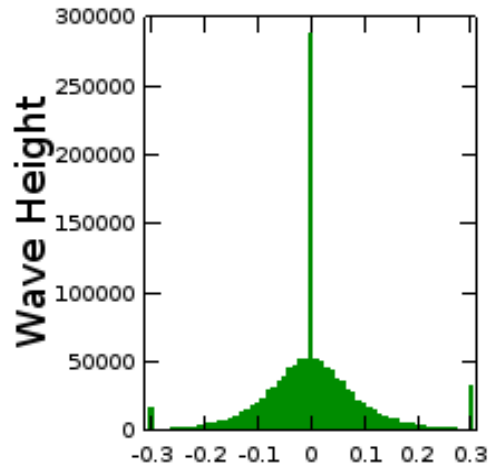
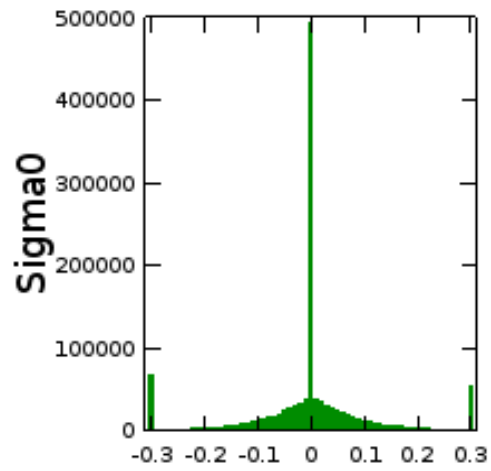
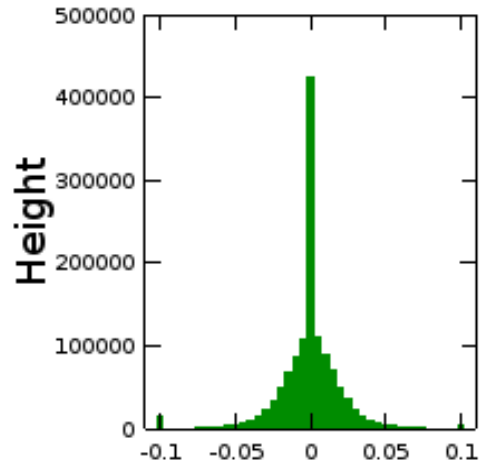
Not meaningful to compare to rain data



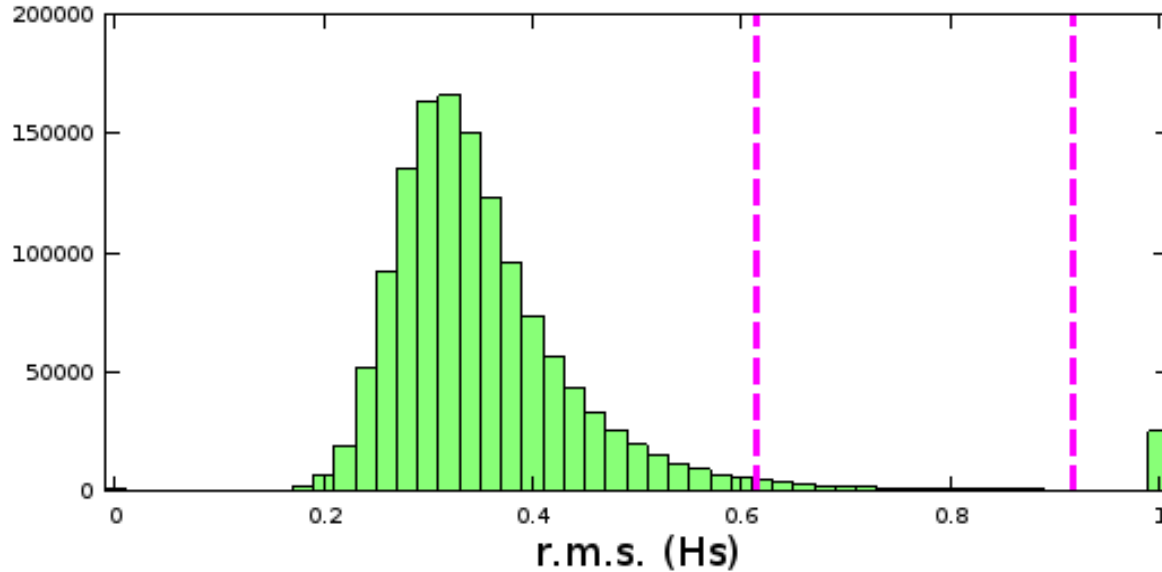
Define anomaly rel.
to 7-pt median

p.d.f. of anomalies





Intra-1Hz variability



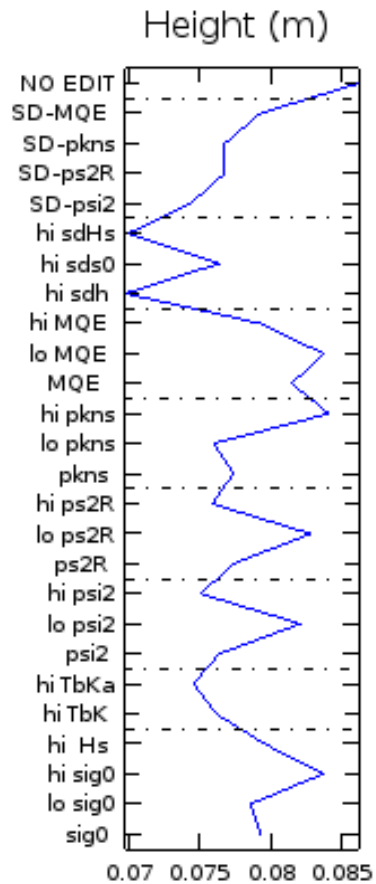
Select percentile:
98th at 0.92m;
96th at 0.61m

Semi-independent measure

Many possible parameters

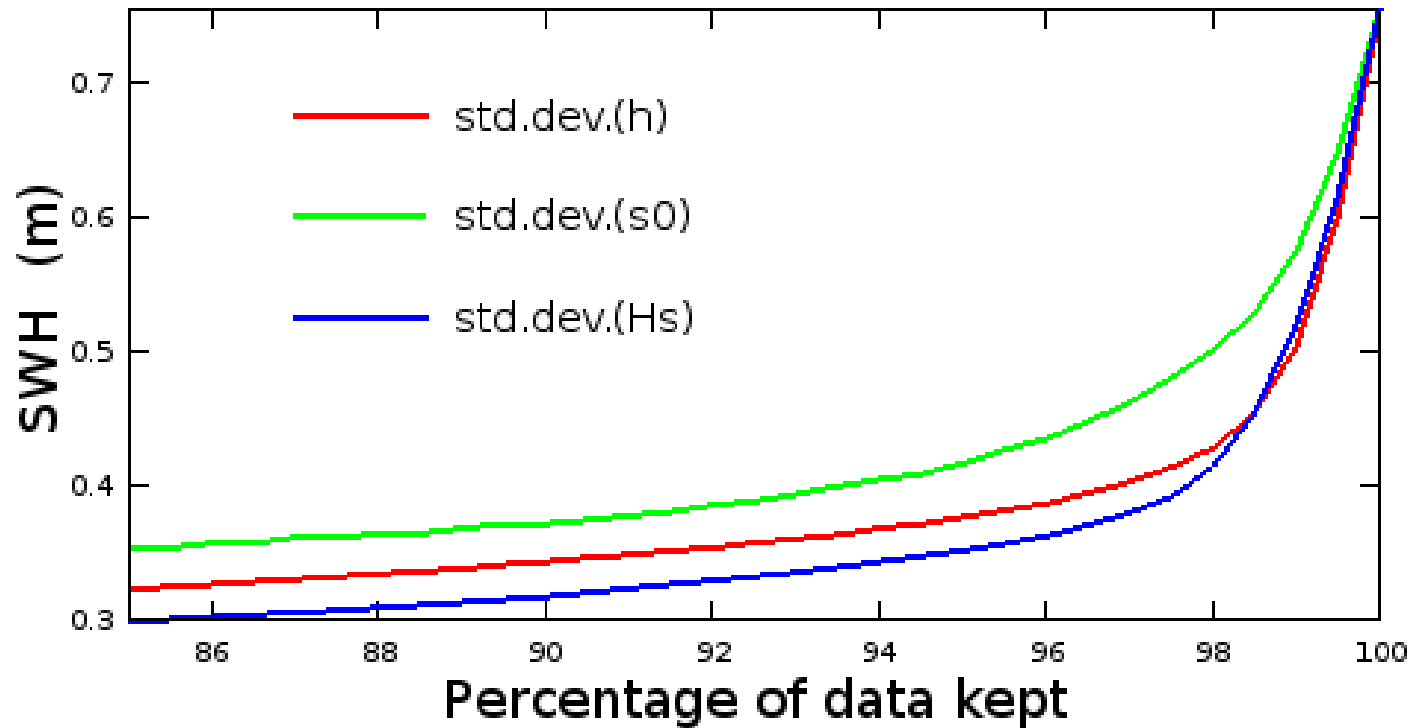
1-tail or 2-tail ?

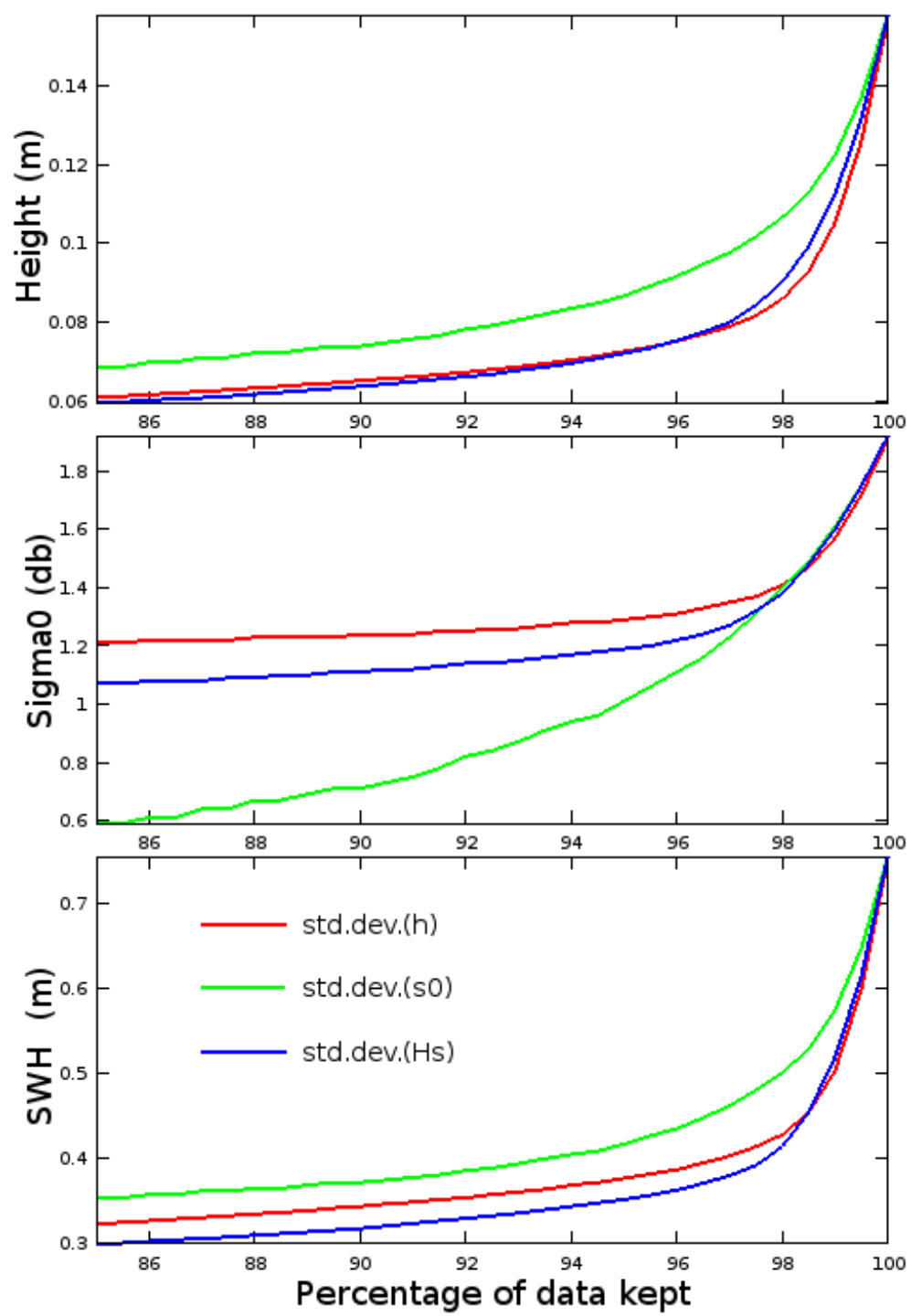
Reduction in |Anomalies|



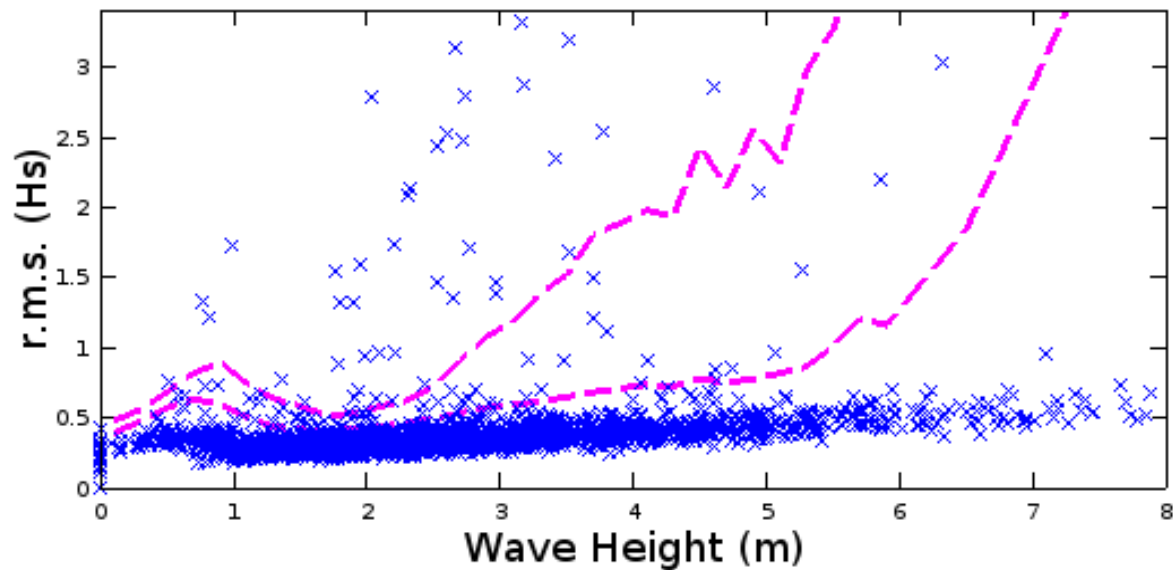
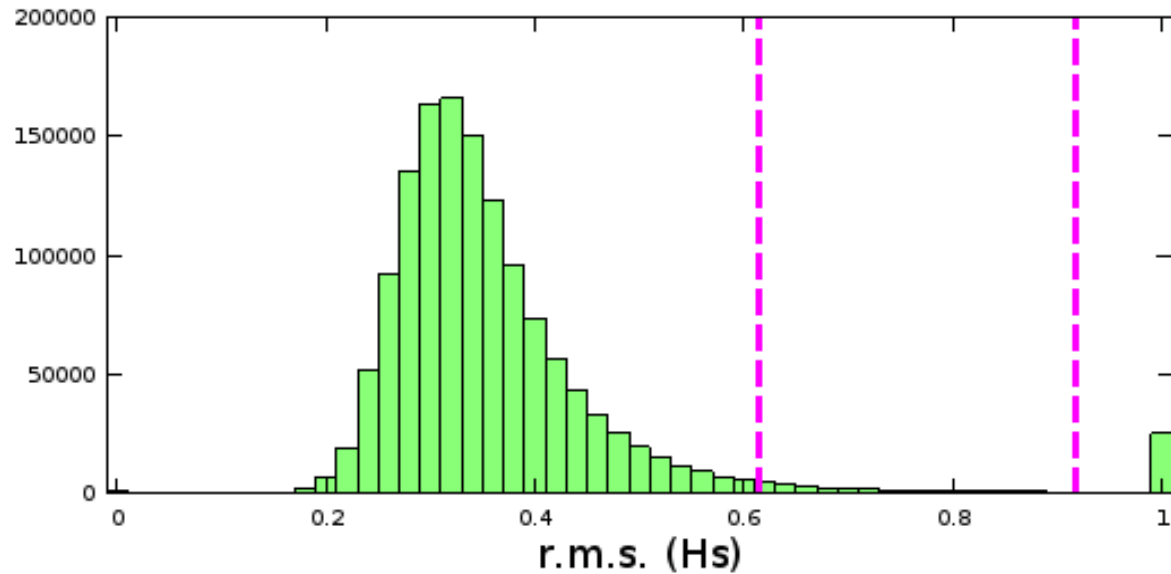
Tried 25 different tests – all worked!

More effective if remove more



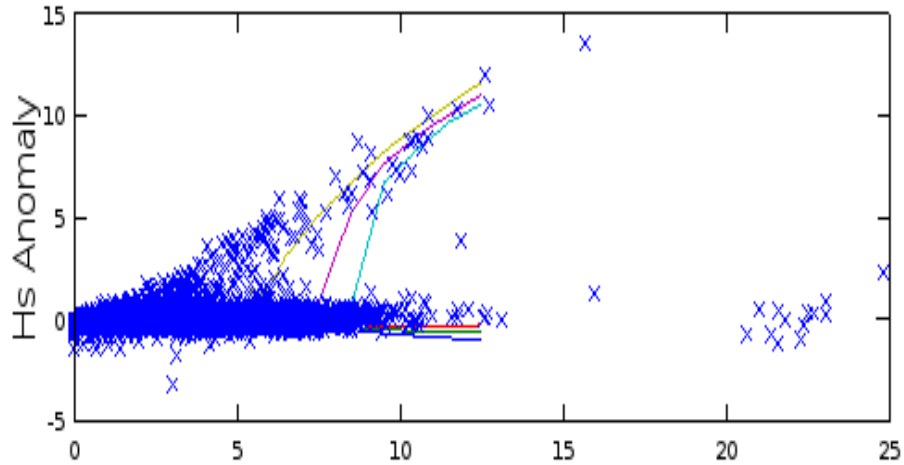


Threshold to vary with H_s ?

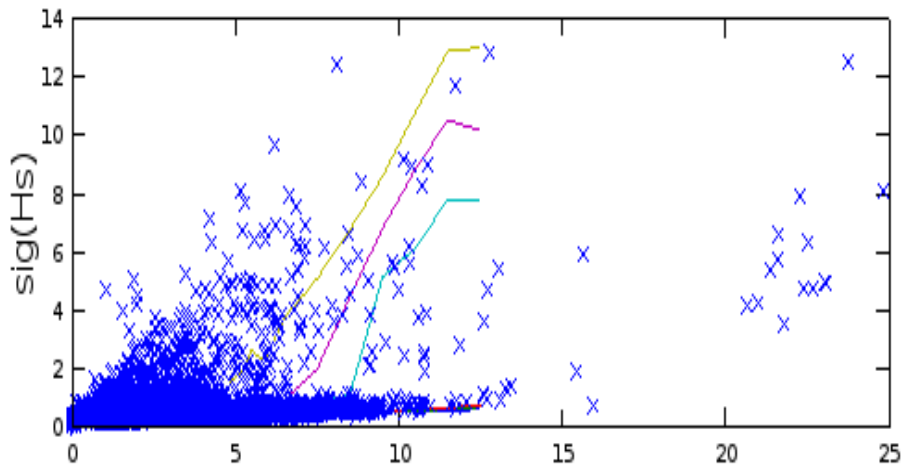


Variability is function of conditions

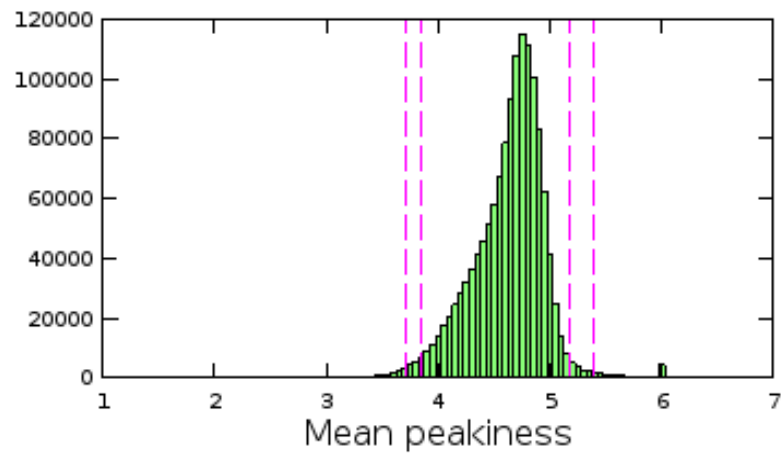
Actual Hs value

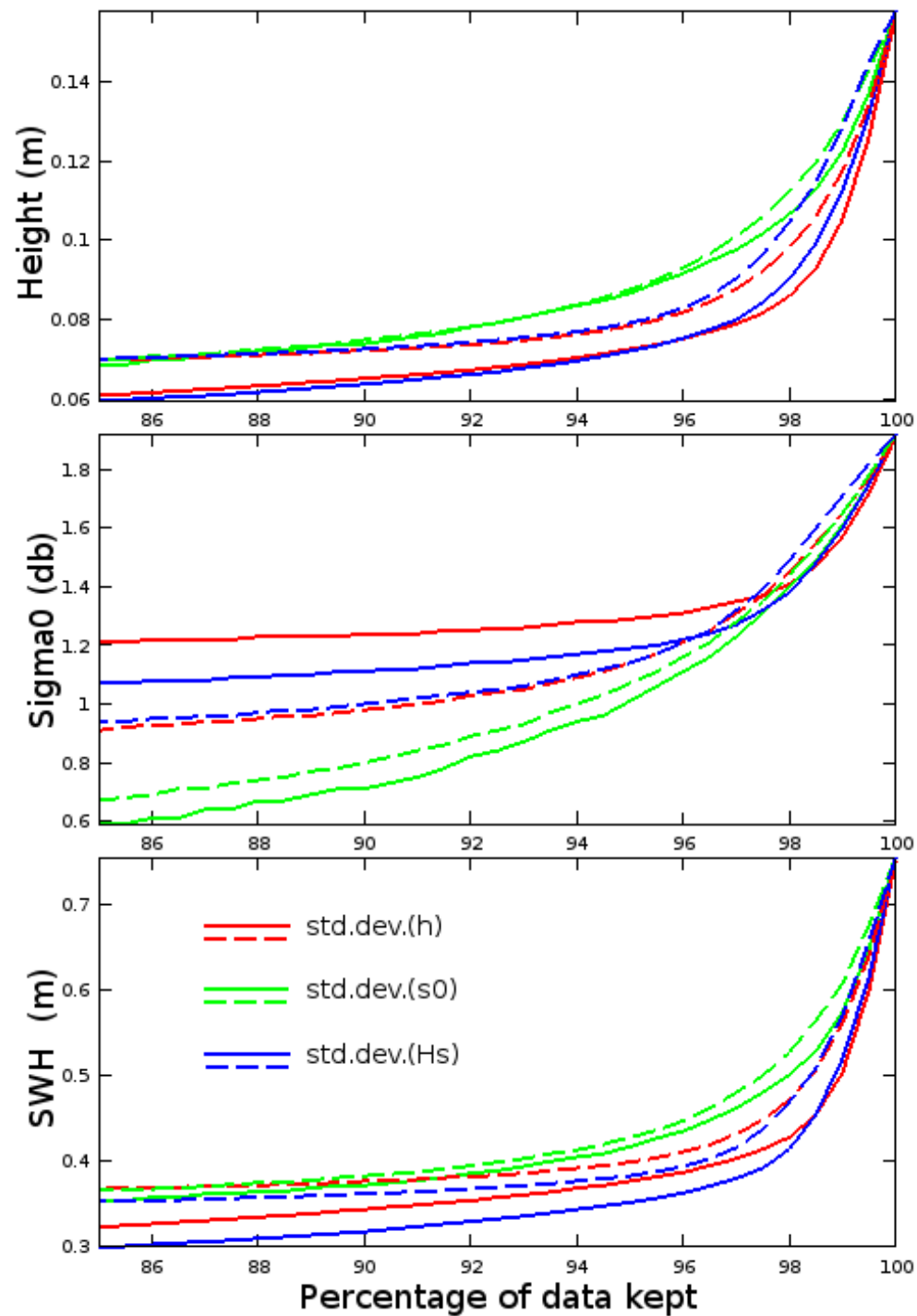


Actual Hs value

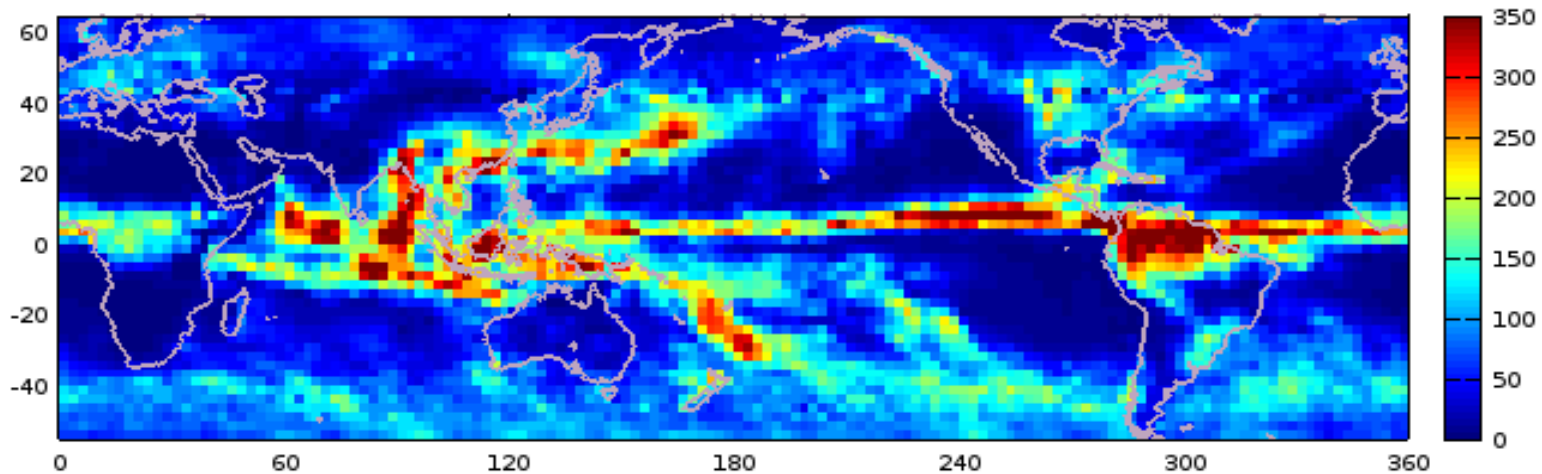


Percentile limits for peakiness

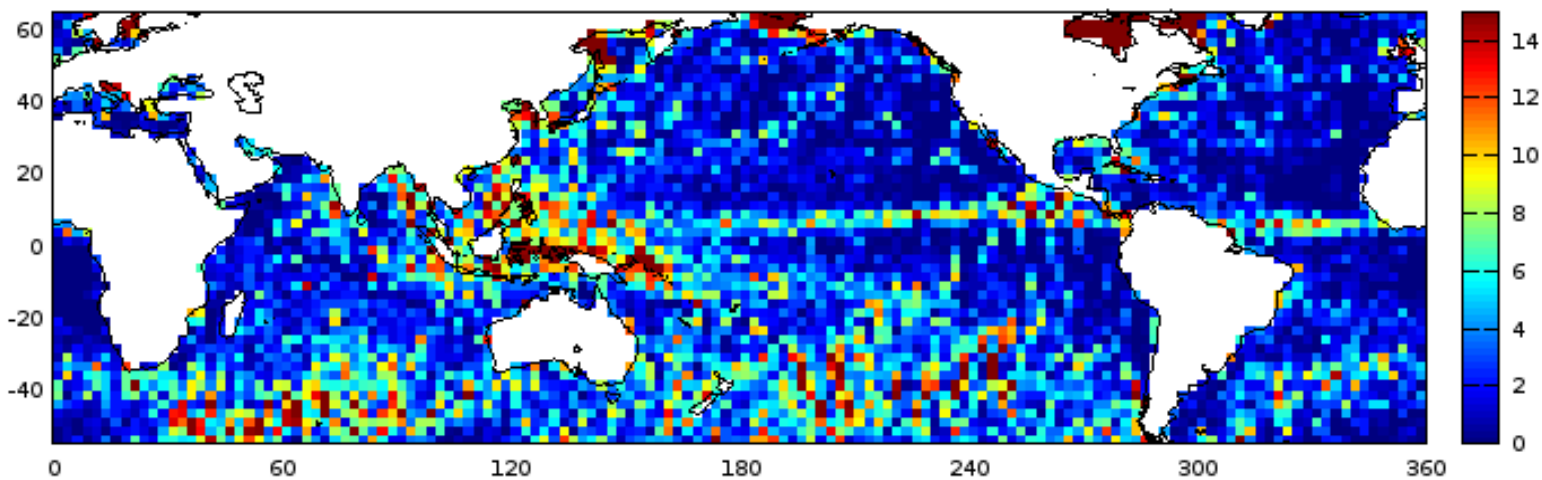




2%



4%



Summary

Flagging bad data rather than rain per se

Most techniques work; need to find most effective one

Rms(Hs) most effective

rms(range) very similar

Different flagging appropriate for sigma0

% lost ??

The more data removed, the smaller the anomalies

Some regions / conditions lose more

Flagging density => rain, ice, possibly high Hs

Chosen threshold depends upon application