ERA-Interim 1x1 PENTAD CLIMATOLOGY 1981–2010

QUALITY CONTROL $T$ & $T_d$
Remove: position, date, blacklisted.
Flag: track, repeats, repeated saturation, super-saturation, anomaly outliers, whole-number series

GRID: ACTUALS, ANOMALIES for DAY, NIGHT
i) 1x1 3 hourly (mean of ≥ 1 ob)
ii) 1x1 daily (mean of ≥ 1 3 hourly 1x1)
iii) 5x5 monthly (mean of ≥ 30% days in month daily 1x1)

DERIVE HUMIDITY, SELECT OBS
Valid climatology, RH 0-150 %rh, $T$ & $T_d$ -80 to 60 °C, $q > 0$ g kg$^{-1}$

GRID: OBS UNCERTAINTY for DAY, NIGHT
Non-aspirated instrument, obs height, climatology: correlation (r=1)
Measurement, whole number: NO correlation (r=0)

BIAS ADJUST & OBS UNCERTAINTY
Non-aspirated instrument + uncertainty: $q$, $e$, $T_w$, RH, DPD
Obs height + uncertainty: $T$, $q$, $e$, $T_w$, RH, DPD
Measurement uncertainty: $T$, $T_w$, RH, $e$, $q$, $T_d$, DPD
Whole number uncertainty: $T$, $T_w$, $e$, $q$, RH, $T_d$, DPD
Climatology uncertainty: $T$, $T_d$, $e$, $q$, RH, $T_w$, DPD

GRID: OBS UNCERTAINTY for ALL, SHIP,
No QC

MERGE DAY & NIGHT ACTUALS, ANOMALIES
iv) 5x5 monthly combined (mean of ≥ 1 monthly 5x5 per grid)

5x5 MONTHLY COMBINED ACTUALS, ANOMALIES for ALL, SHIP
No QC

MERGE DAY & NIGHT OBS UNCERTAINTY
Non-aspirated Instrument, obs height, climatology: correlation (r=1)
Measurement, whole number: NO correlation (r=0)

5x5 MONTHLY COMBINED OBS UNCERTAINTY for ALL, SHIP,
No QC

DERIVE SAMPLING, TOTAL OBS and FULL UNCERTAINTY for DAY, NIGHT, COMBINED

5x5 MONTHLY SAMPLING, TOTAL OBS and FULL UNCERTAINTY for ALL, SHIP

5x5 MONTHLY ACTUALS, ANOMALIES for DAY, NIGHT, ALL, SHIP
No QC

MERGE DAY & NIGHT ACTUALS, ANOMALIES
iv) 5x5 monthly combined (mean of ≥ 1 monthly 5x5 per grid)

GRID: ACTUALS, ANOMALIES for DAY, NIGHT
i) 1x1 3 hourly (mean of ≥ 1 ob)
ii) 1x1 daily (mean of ≥ 1 3 hourly 1x1)
iii) 5x5 monthly (mean of ≥ 30% days in month daily 1x1)

5x5 MONTHLY ACTUALS, ANOMALIES for DAY, NIGHT, ALL, SHIP
No QC

MERGE DAY & NIGHT ACTUALS, ANOMALIES
iv) 5x5 monthly combined (mean of ≥ 1 monthly 5x5 per grid)

5x5 MONTHLY COMBINED ACTUALS, ANOMALIES for ALL, SHIP
No QC

CLIMATOLOGY for DAY, NIGHT, COMBINED
v) 5x5 monthly climatology and standard deviation 1981-2010 (mean of ≥ 10 monthly 5x5 per grid)

5x5 MONTHLY DAY, NIGHT, COMBINED CLIMATOLOGY for ALL, SHIP
No QC

REnormalize ANOMALIES for DAY, NIGHT, COMBINED
vi) Remove 1981-2010 monthly mean of gridded anomalies from anomalies

5x5 MONTHLY DAY, NIGHT, COMBINED ANOMALIES for ALL, SHIP
No QC

INFILL & INTERPOLATE CLIMATOLOGY for COMBINED
Linearly interpolate across small space/time gaps and then to 1x1 pentad

1x1 PENTAD COMBINED CLIMATOLOGY for ALL

KEY:
- Input data
- Process
- Output data
- 1st iteration flow/data
- 2nd iteration flow/data
- 3rd iteration flow/data

$T$ & $T_d$ + SST, $u$, metadata
SHIPS (PT 0-5) + MOORED BUOYS (PT 6, 8)