

ICOADS: Data Characteristics and Future Directions

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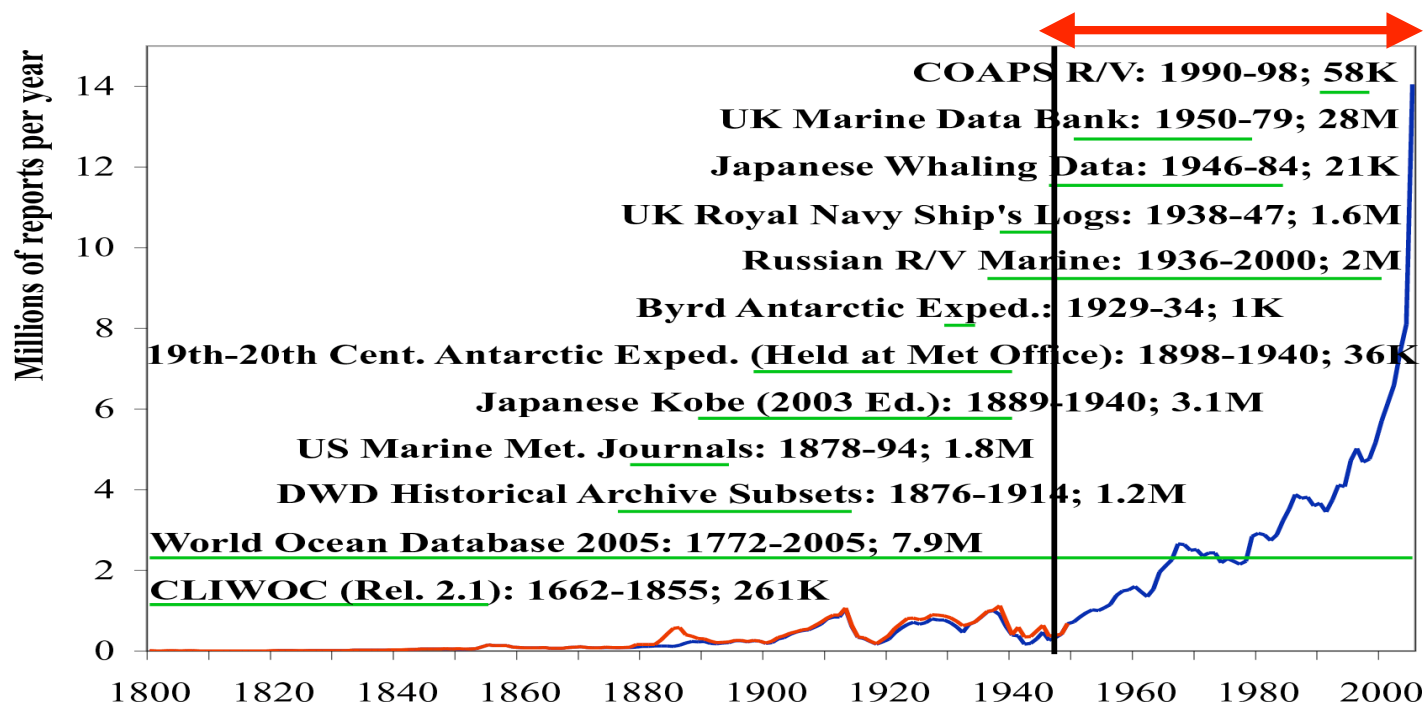
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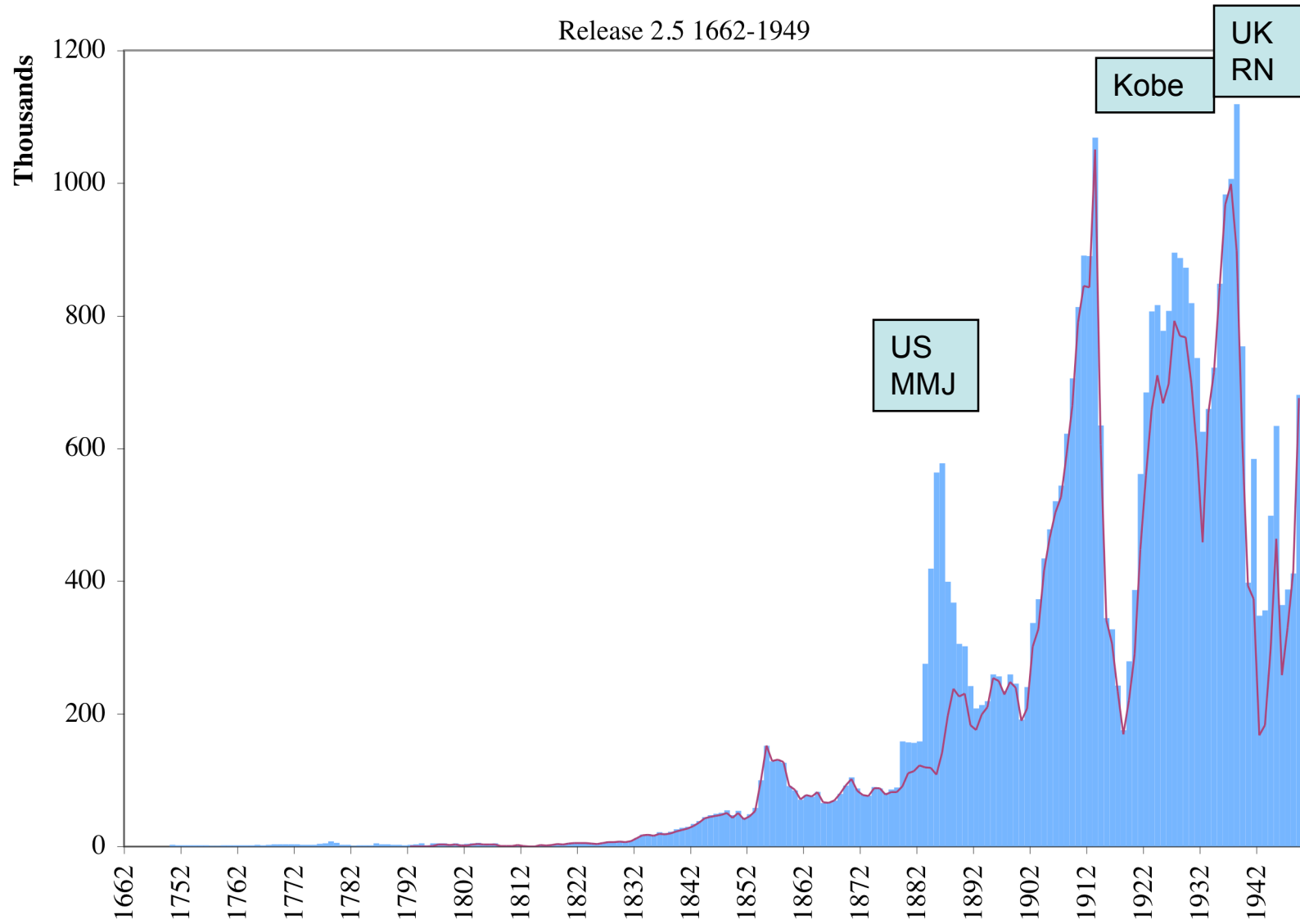


Data Characteristics

- Worley et al. (S2O2) introduced R2.5
- Progress and plans:
 - 1662-1949 fully processed
 - 1950-2000 (approximate): ~Sept. 2008



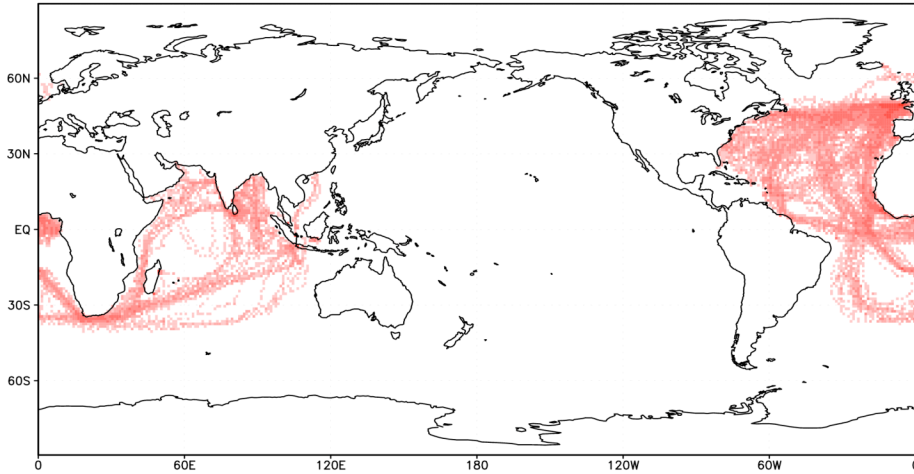
Temporal Changes in Data Density: 1662-1949



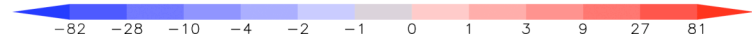
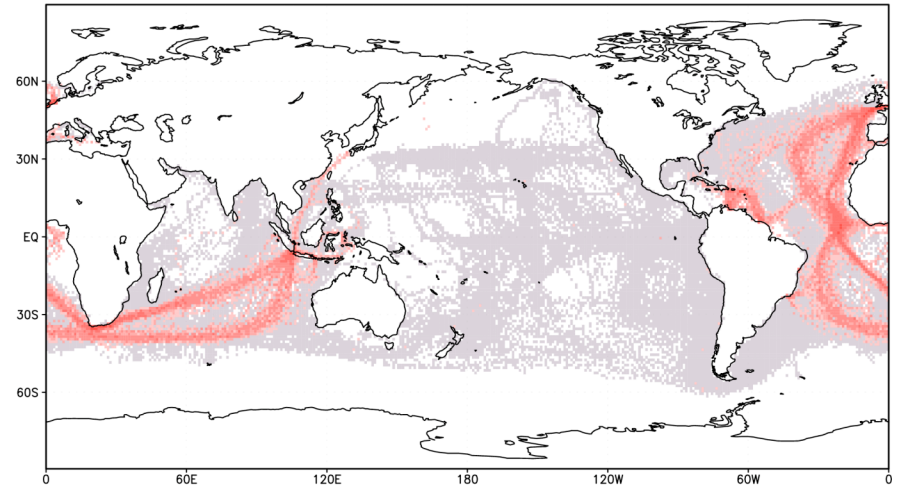
Spatial Changes in Data Density (e.g., decades)

(red= + , grey= 0 , blue= -)

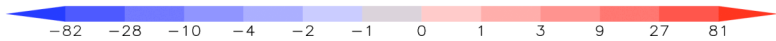
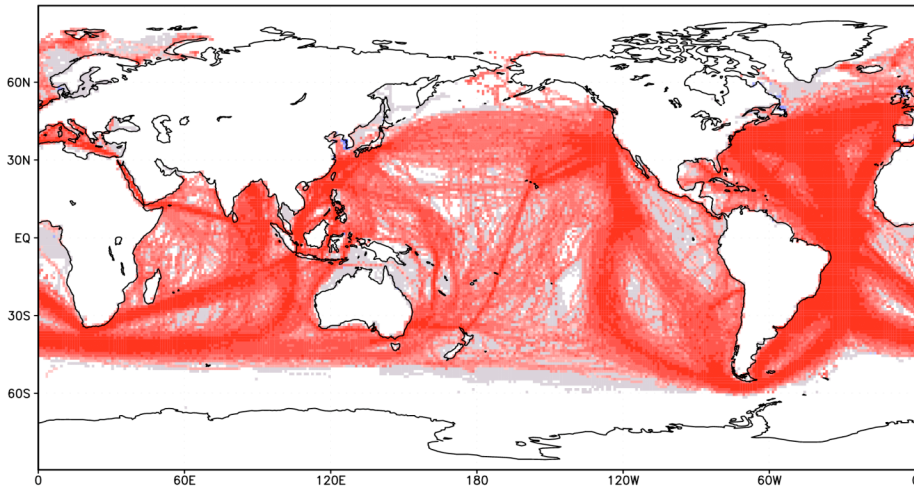
Release 2.5 minus Release 2.4 Nobs 1750's



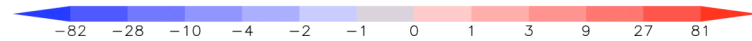
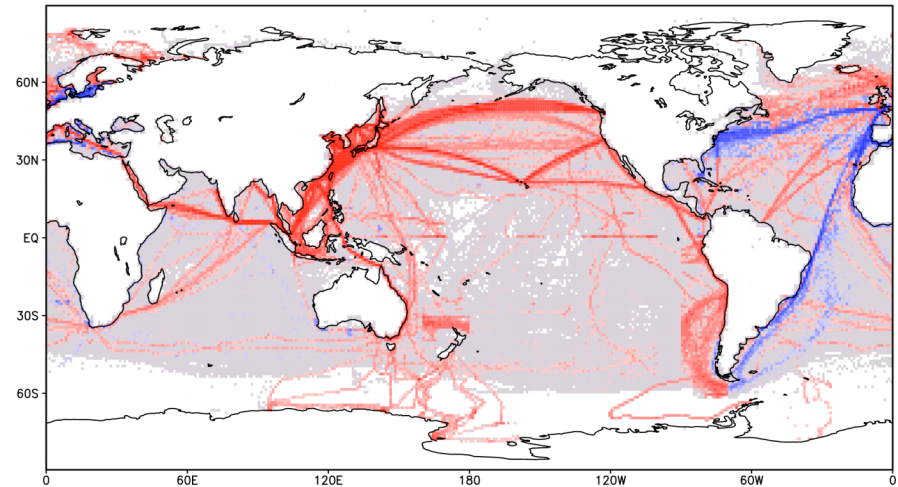
Release 2.5 minus Release 2.4 Nobs 1830's



Release 2.5 minus Release 2.4 Nobs 1880's



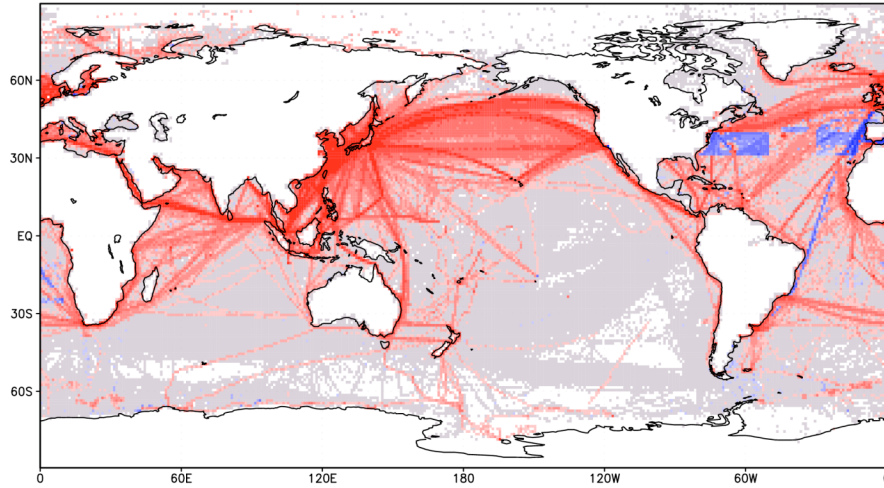
Release 2.5 minus Release 2.4 Nobs 1910's



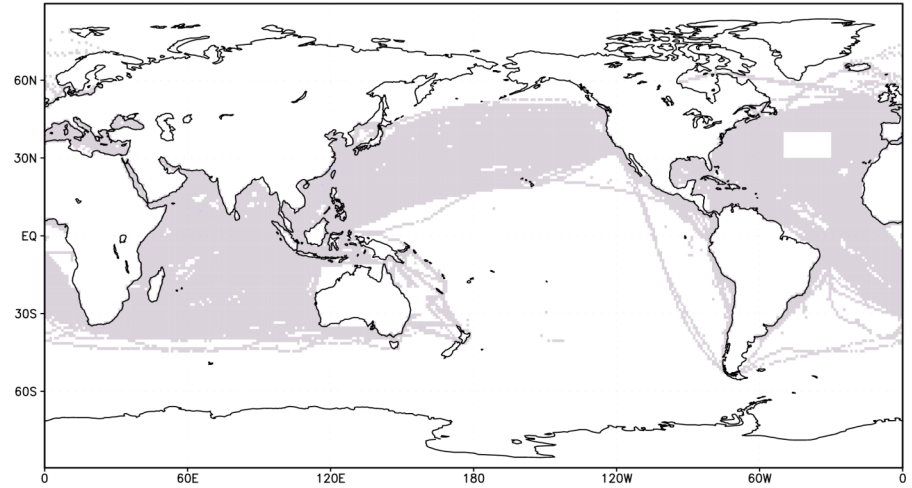
Focus on the 1930s

(red= + , grey= 0 , blue= -)

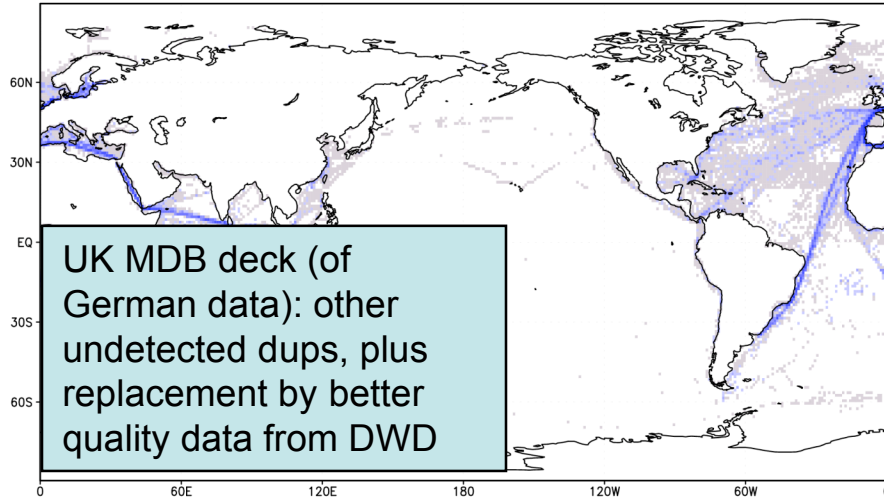
Release 2.5 minus Release 2.4 Nobs 1930's



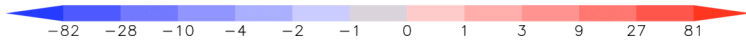
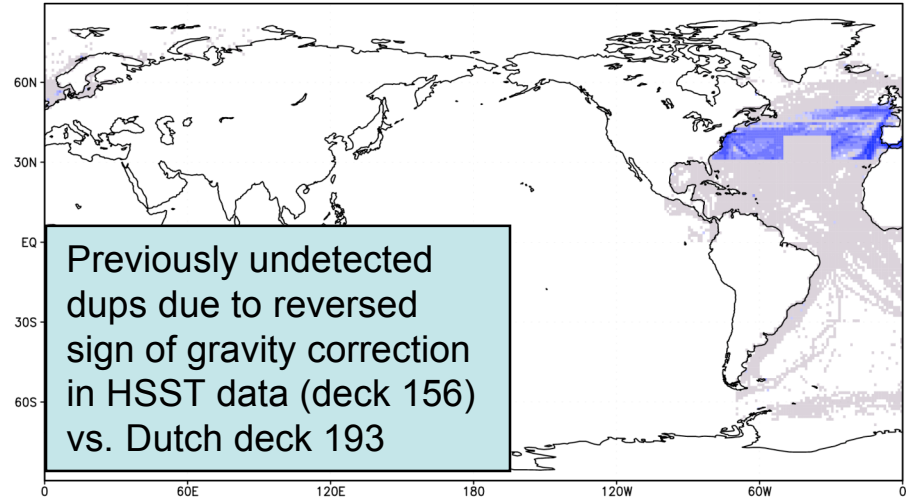
Release 2.5 minus Release 2.4 193 Nobs 1930's



Release 2.5 minus Release 2.4 215 Nobs 1930's

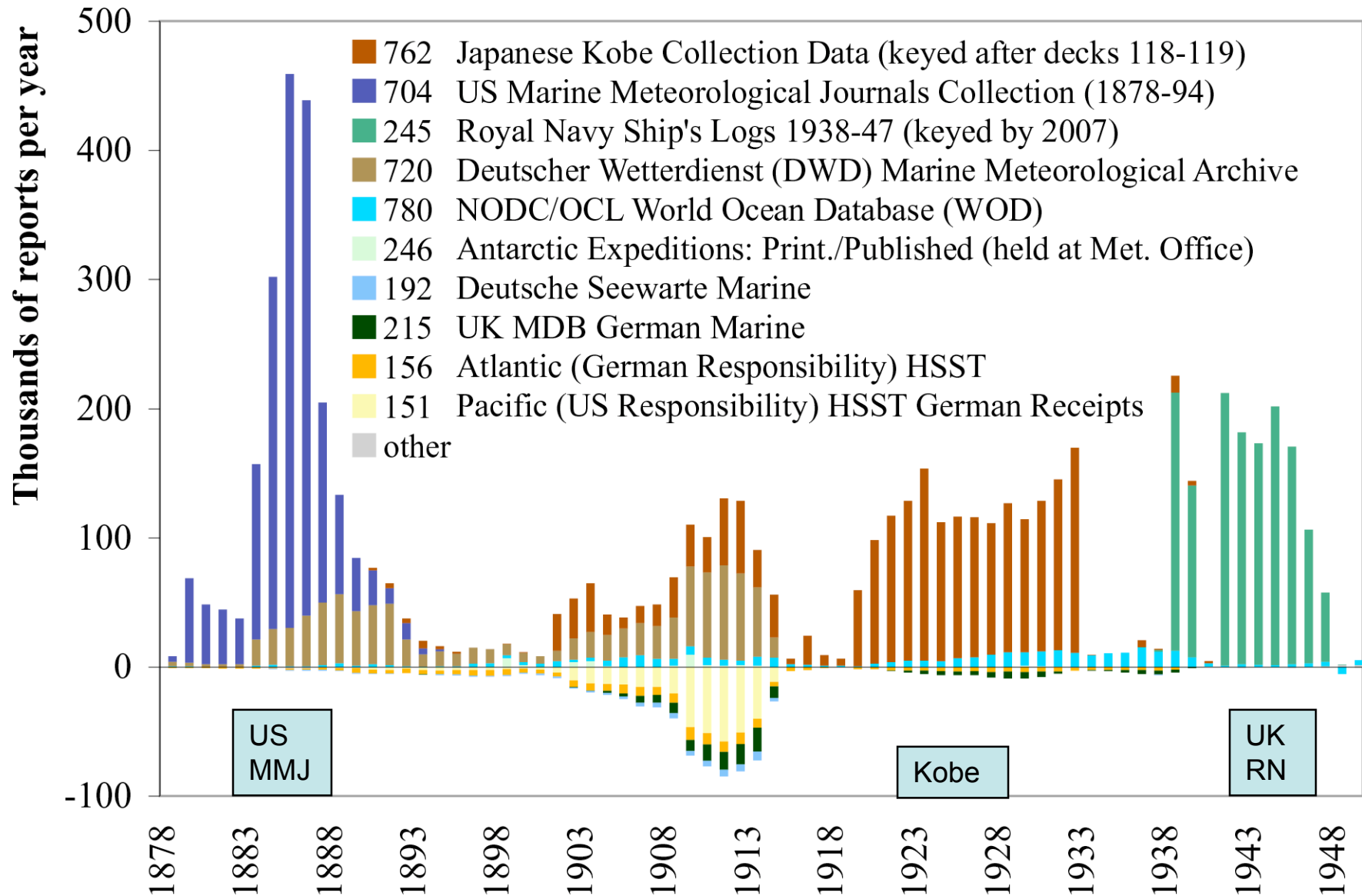


Release 2.5 minus Release 2.4 156 Nobs 1930's



R2.5 minus R2.4 by deck

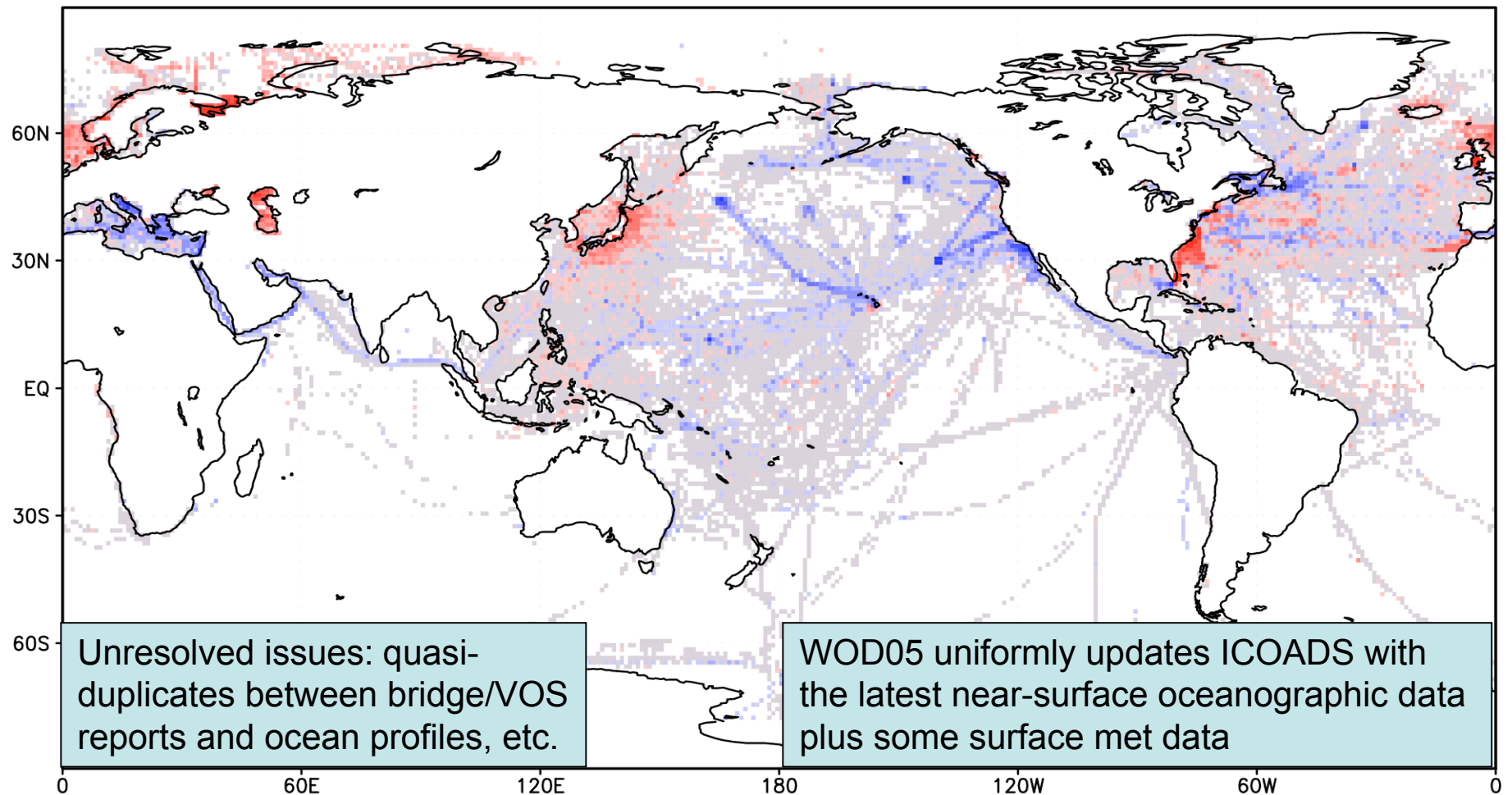
(smaller deck differences combined into "other")



Focus on World Ocean Database 2005 (deck 720)

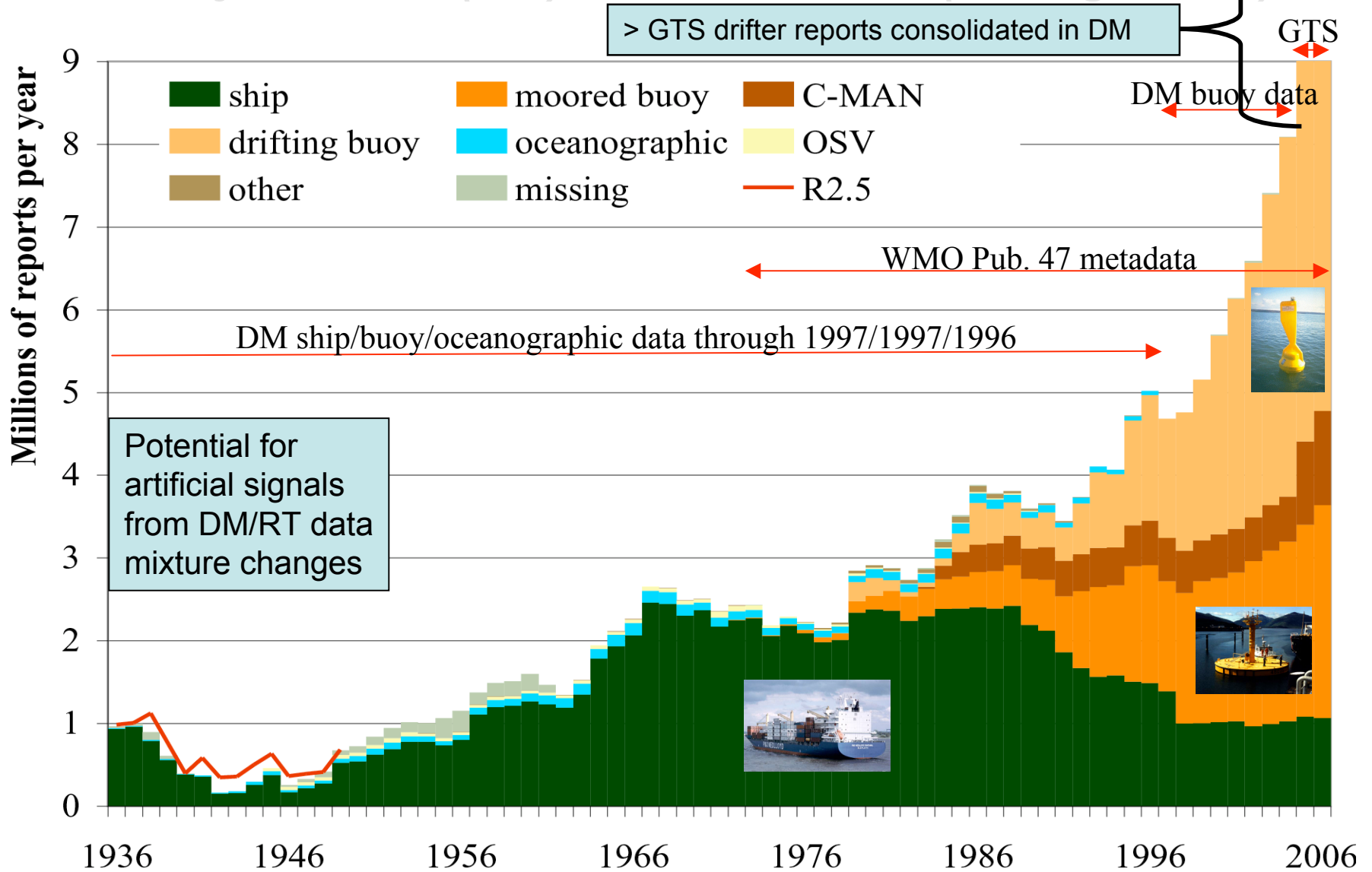
(red= + , grey= 0 , blue= -)

Release 2.5 minus Release 2.4 780 Nobs 1940's



Complexity of ICOADS recent data mix

Delayed-mode (DM) v. RT GTS data (through 2006)



Future Directions:

1. Update Frequency

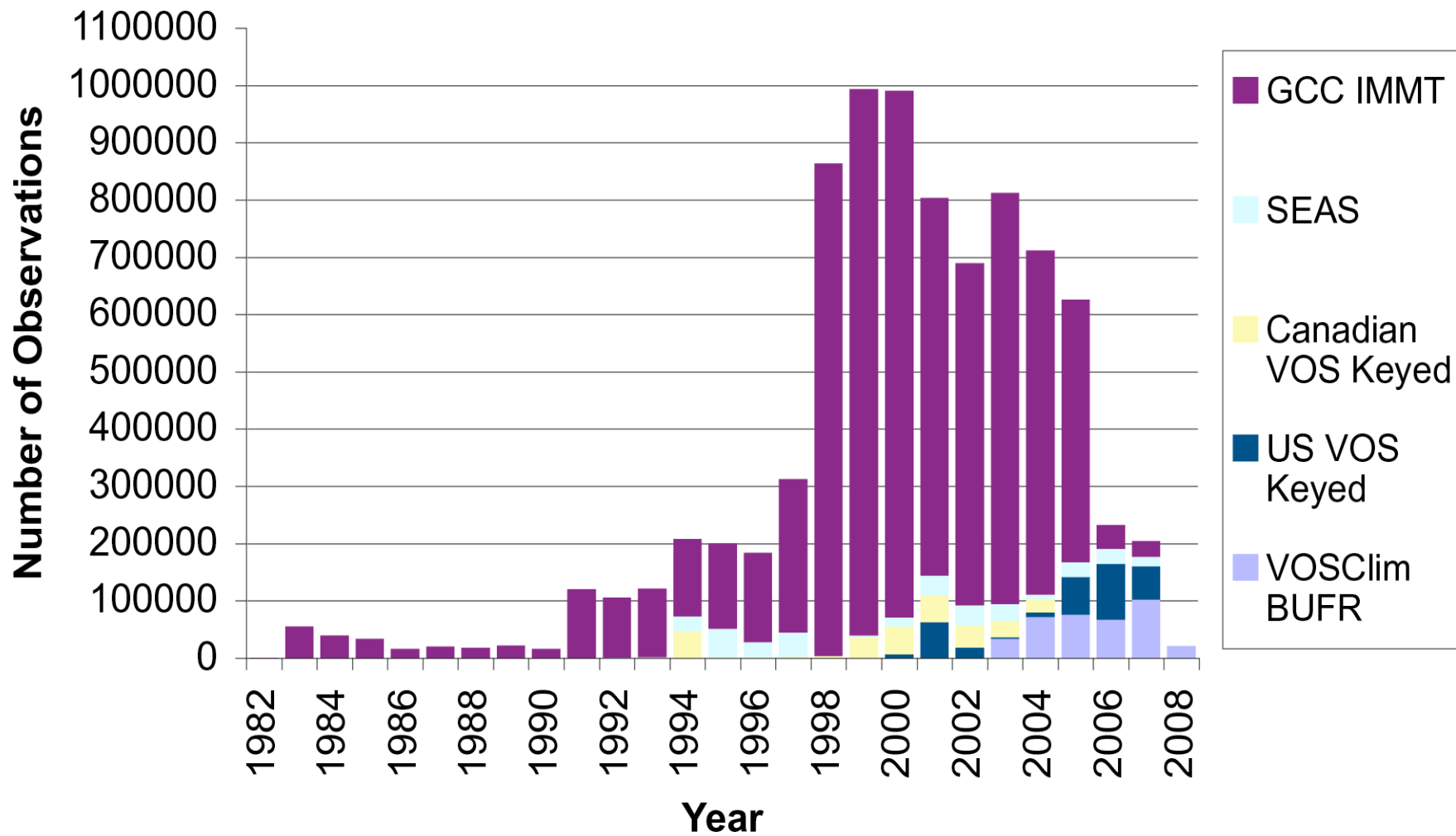
- Replacing NCEP Real-time (NRT):
 - IMMA & consistent ICOADS summaries
 - aim for monthly updates (GTS + some DM)
- Challenges:
 - NOAA funding pressures – larger role for NCDC
 - Historical (CDRs) updates not suitable for “operations”
 - VOS call sign masking
 - Stemming from security and commercial concerns
 - NCEP GTS Dec 2007: all ships masked
 - Mandated WMO BUFR transition
 - could be disruptive to data quality and continuity

Related Update Improvements

- Continued periodic integration other DM data:
 - MEDS/ISDM (drifting buoys)
 - Moored buoy arrays
 - TAO/PIRATA/NDBC + OceanSITES
 - Research Vessels: SAMOS/GOSUD
- ODAS metadata: JCOMM only beginning coordinated archival
 - Historical metadata problematic

IMMA format provides crucial flexibility & extensibility to advance many of these goals

***DM VOS Data Available to ICOADS from NCDC:
Over 8.4M reports (through March 2008)
Caveat: Heavy duplication expected***

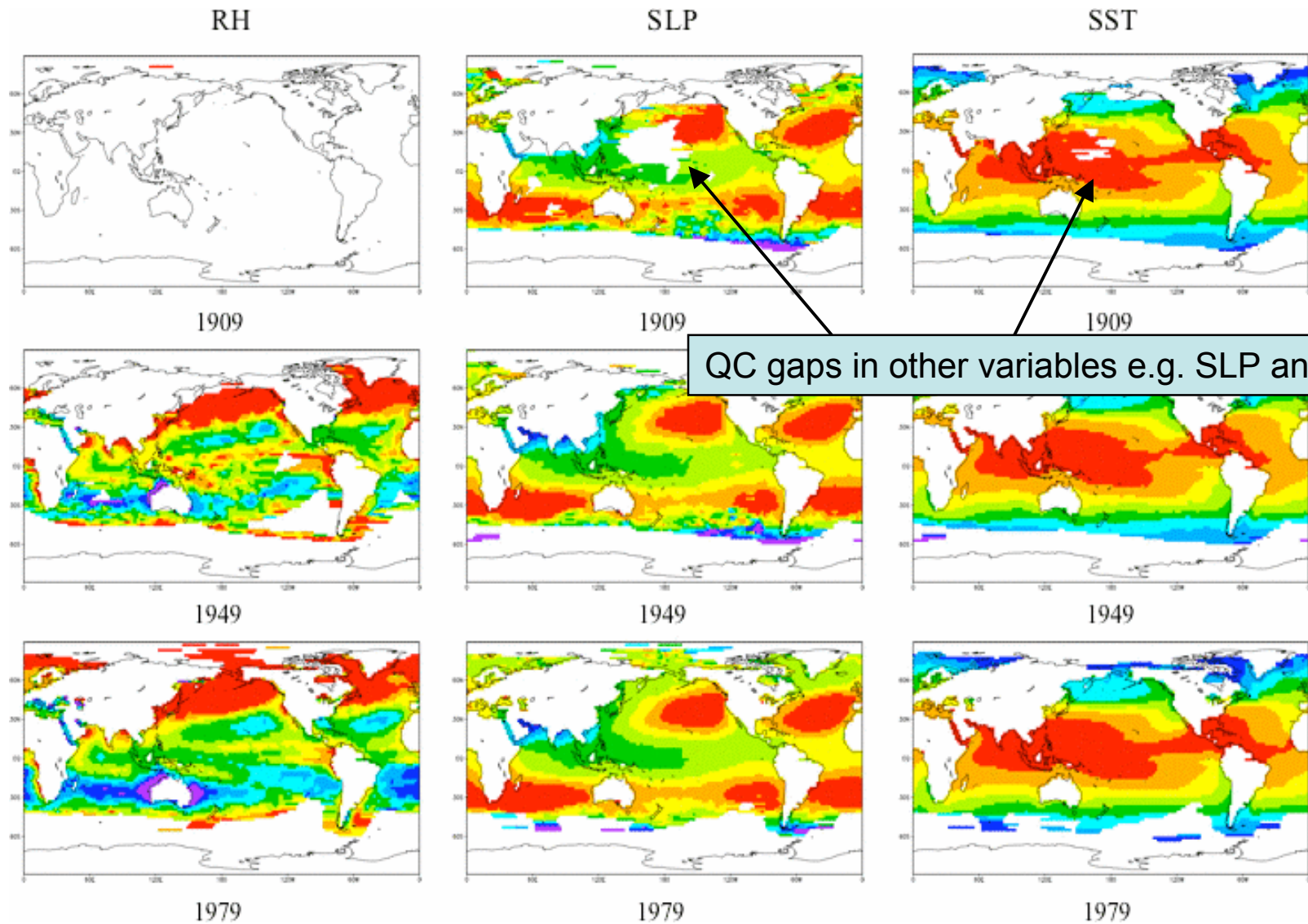


Future Directions:

2. Improve Data Quality Control

- Existing ICOADS QC
 - Out-of-date algorithms and QC limits
 - Can be insufficiently responsive to genuine climate signals (“trimming” problem)
- Improvements could be tied into:
 - Enhanced internationalization (JCOMM):
 - E.g., improved VOS data flow: TT-DMVOS
 - Proposed “Climate ICOADS” Program (Smith et al., S4O5)

Ad Hoc QC Improvement for R2.5: Trimming Limits (July) for RH: Used 1910-49 for 1854-1910

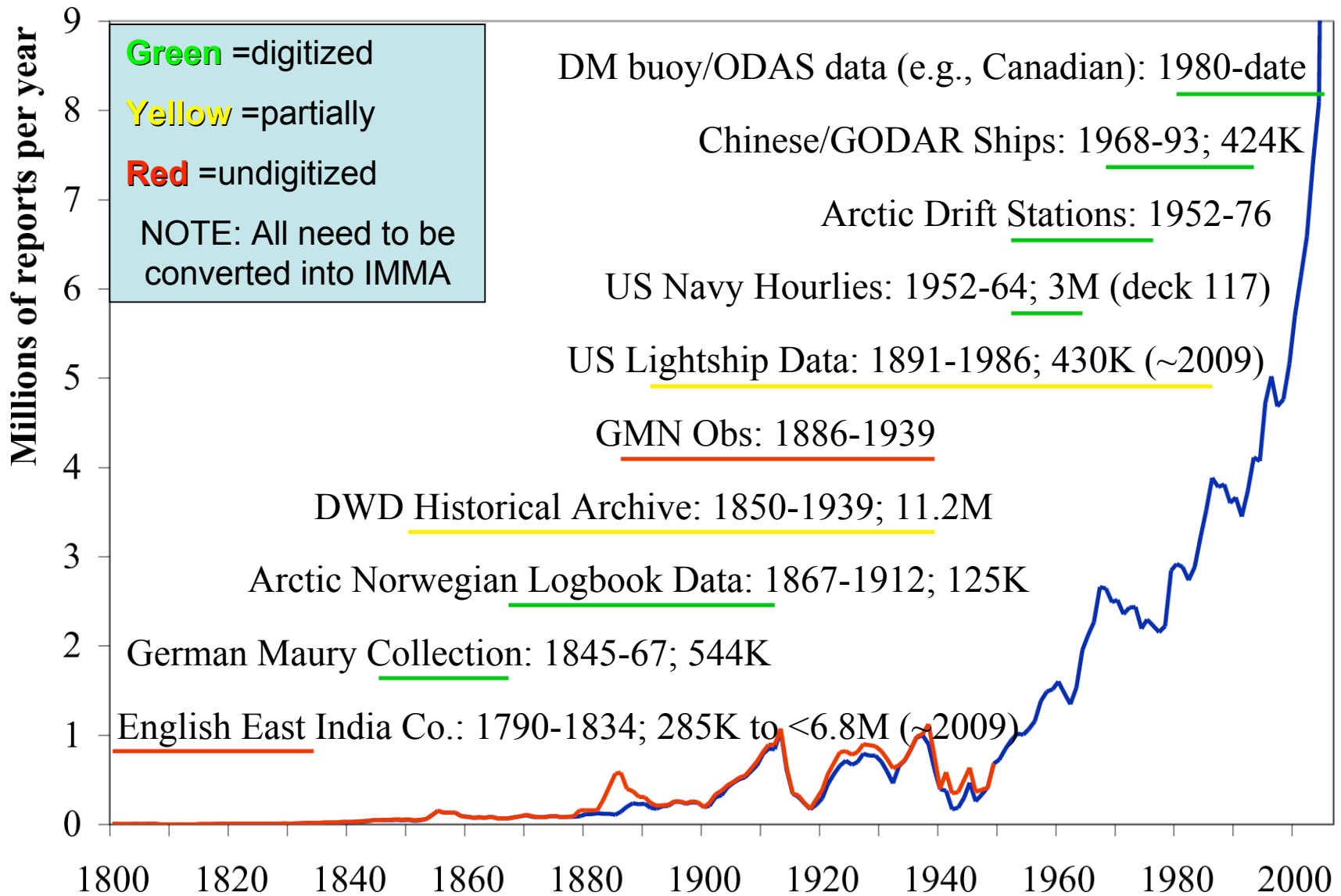


QC gaps in other variables e.g. SLP and SST

Future Directions:
***3. Continuing Recovery of
Historical Data and Metadata***

- Vigorous international cooperation is leading to a wealth of new historical data becoming available, e.g.:
 - CDMP (Freeman; S2P1)
 - RECLAIM project (Wilkinson et al.; S2P2)
 - CLIWOC etc. (Wheeler; S2P4, S5O8)
 - Marine Eco.+ (Marzin & Claesson; S2O5)
 - ACRE (Alan et al.; S6O3)

Future Blend Candidates



Conclusions

- We are making steady progress in enhancement of data & metadata
 - with better options for data access
 - international involvement key
- To better support climate research, important work remains e.g.:
 - data and metadata archeology
 - update frequency
 - DM/Auxiliary data access
 - data quality control

