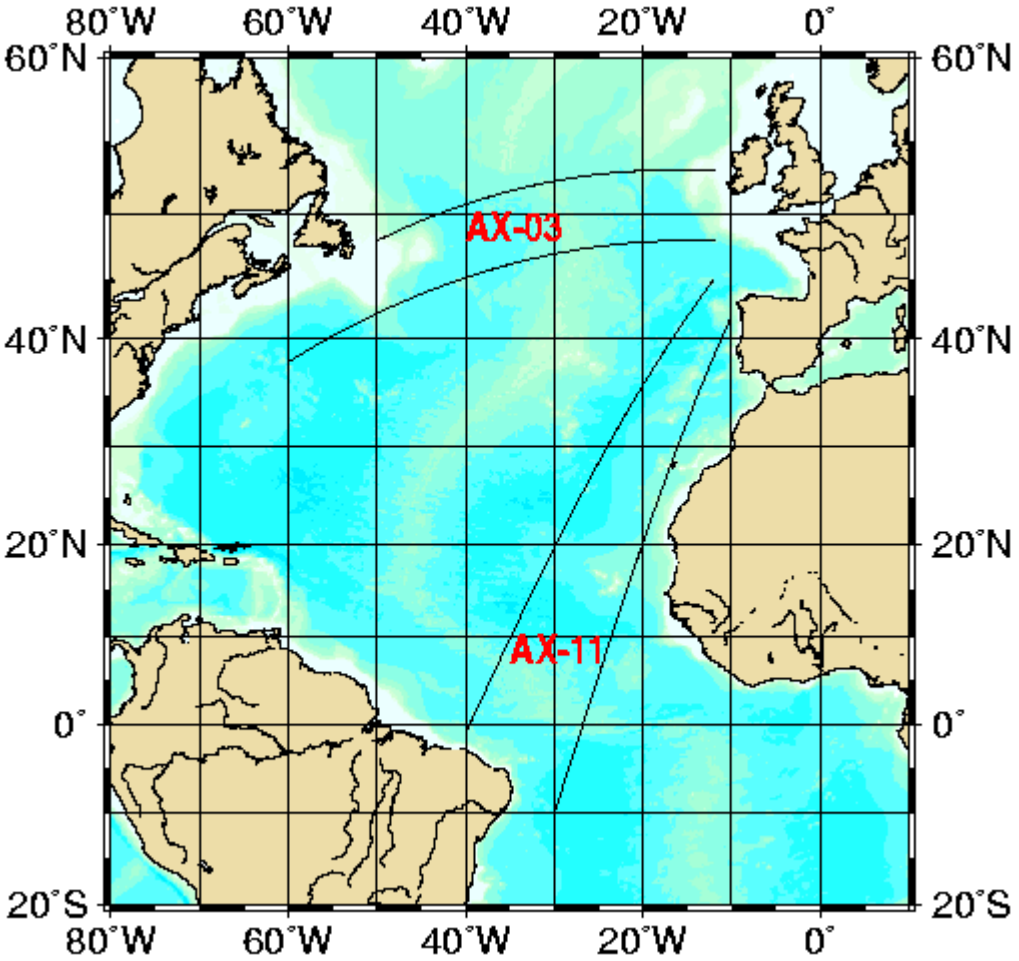
BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE

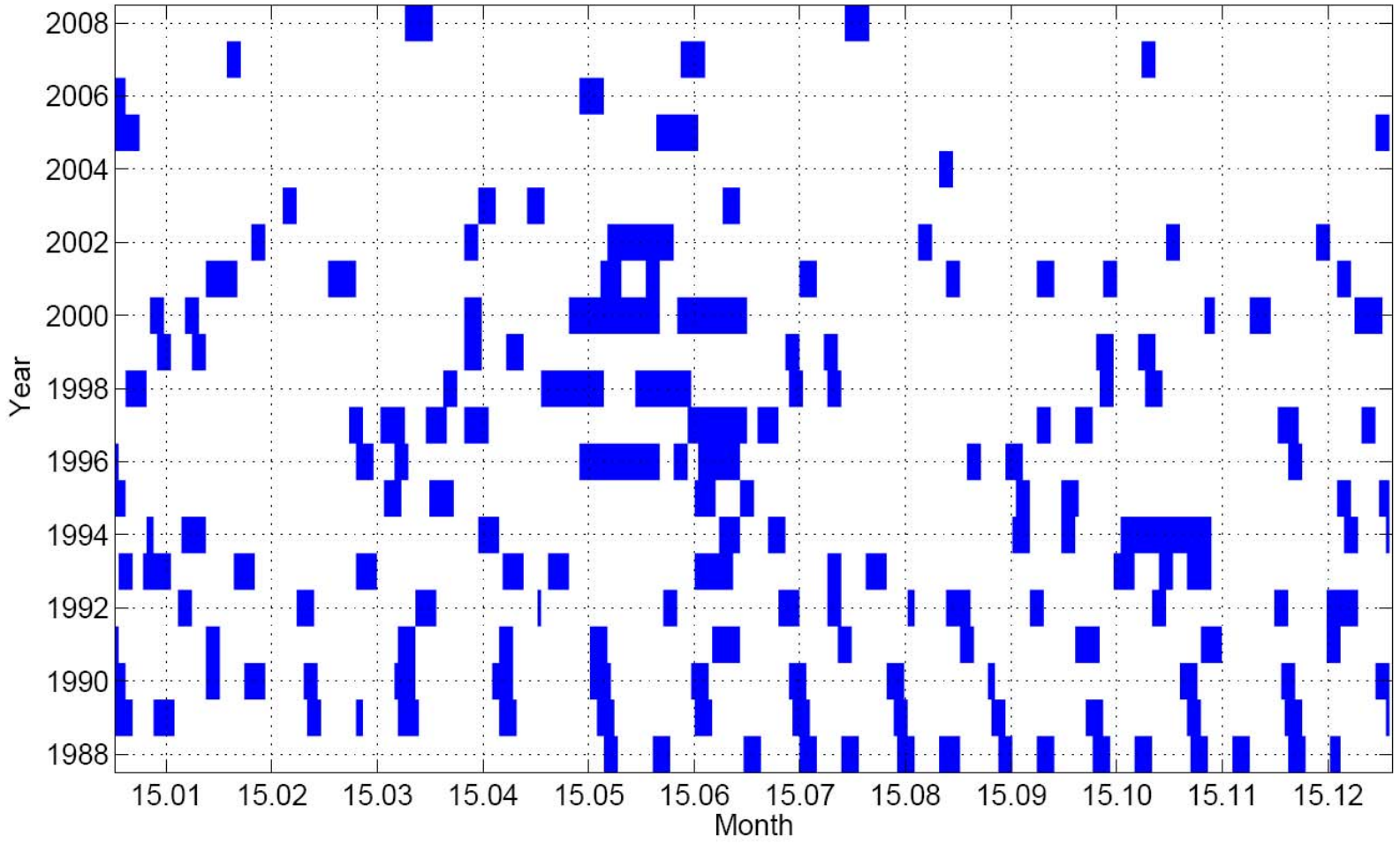
Long-term monitoring of the Subpolar North Atlantic by the BSH XBT Programme

XBT lines maintained by BSH

- mainly operated by commercial vessels, occasional sections by reseach vessels
- North Atlantic line AX-03, data since 1988, high-density line
- Europe-Brazil line AX-11, data since 1990, high-frequency line



Data distribution AX-03 line



XBT types

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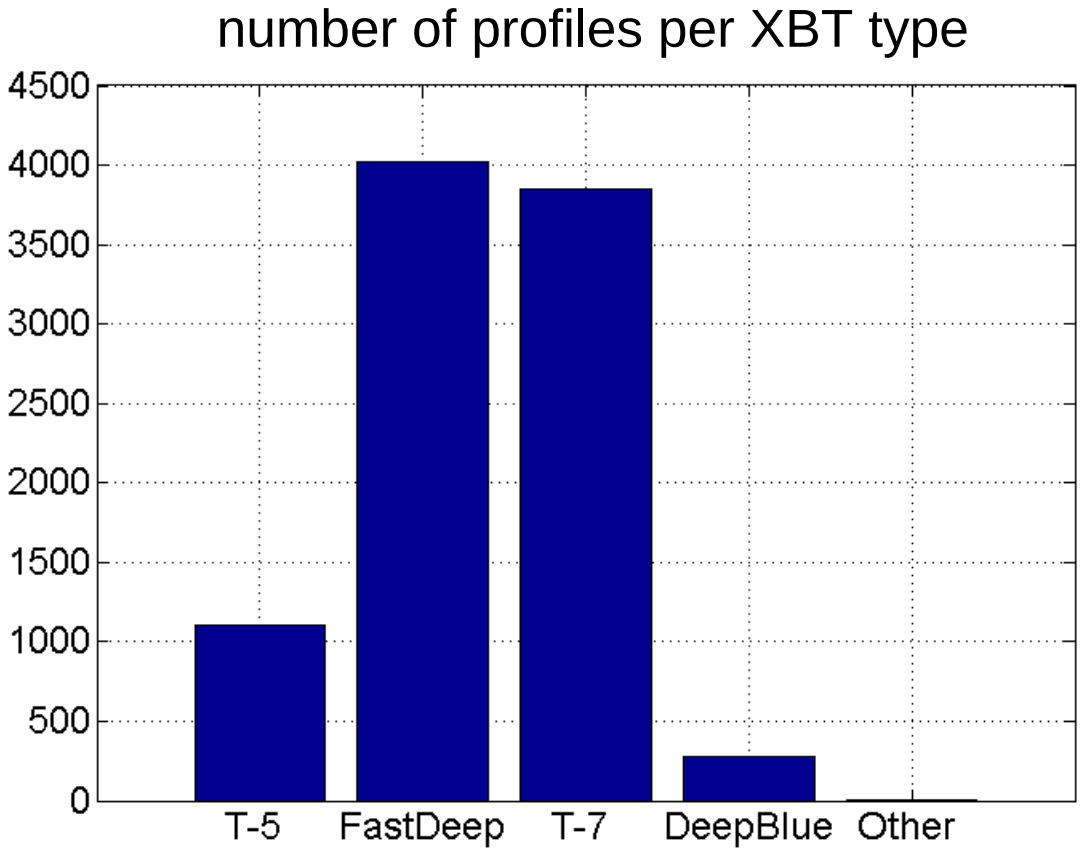
- (most) XBT data is stored without fall rate corrections

- meta data for all XBTs:
  - fall rate equation
  - recording system



Parallel XBT & CTD measurements

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Cruise	Leg	Period of XBT-Measurements
FS Gauss	316W	02.05.1998 - 20.05.1998
FS Gauss	316E	30.05.1998 - 14.06.1998
FS Gauss	350W	10.05.2000 - 04.06.2000
FS Gauss	350E	10.06.2000 - 29.06.2000
FS Gauss	384W	22.05.2002 - 09.06.2002
FS Gauss	384E	20.06.2002 - 07.07.2002
N/O Thalassa	SUBPOLAR	05.06.2005 - 16.06.2005
FS Meteor	M82/2	03.08.2010 - 01.09.2010

XBT vs. CTD measurements

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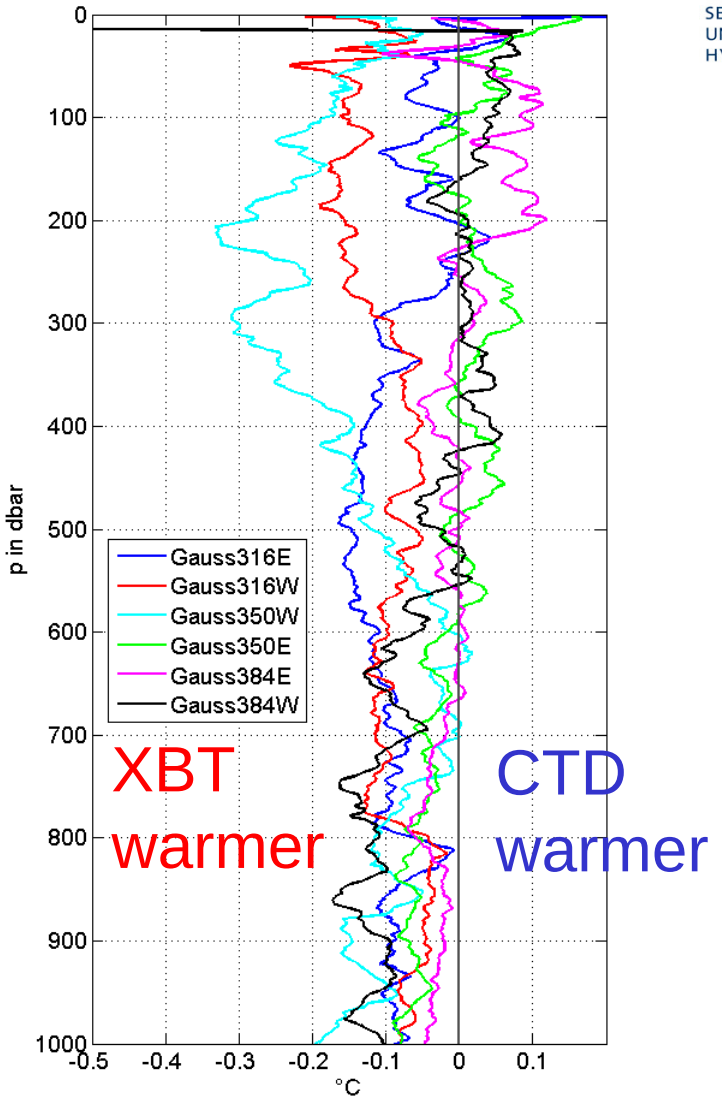
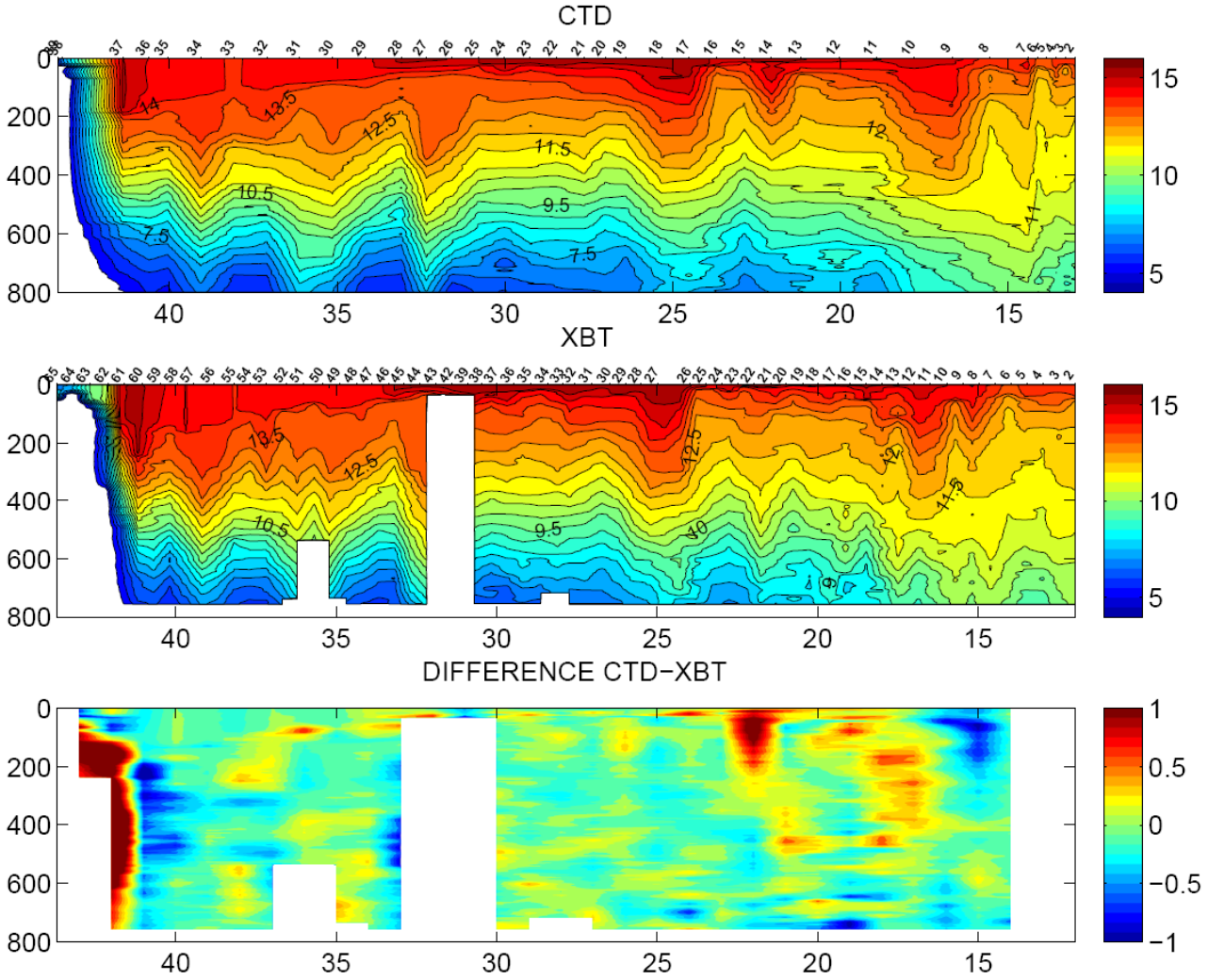
mean difference CTD-XBT along Gauss sections 1998, 2000, 2002

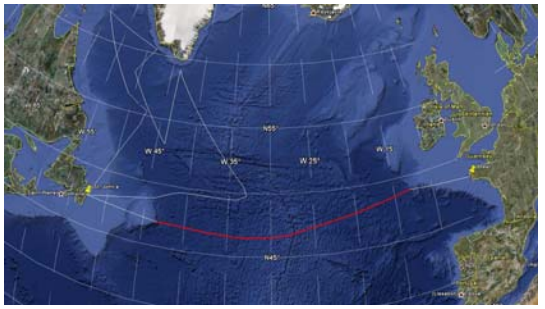
- very different from cruise to cruise, even in the same year
- mean depth-independent XBT bias of o(0.1°C)
- no in-depth analysis yet, but same XBT-types on all cruises...
- Bias problem might be related to different CTD and XBT sampling



XBT vs. CTD measurements



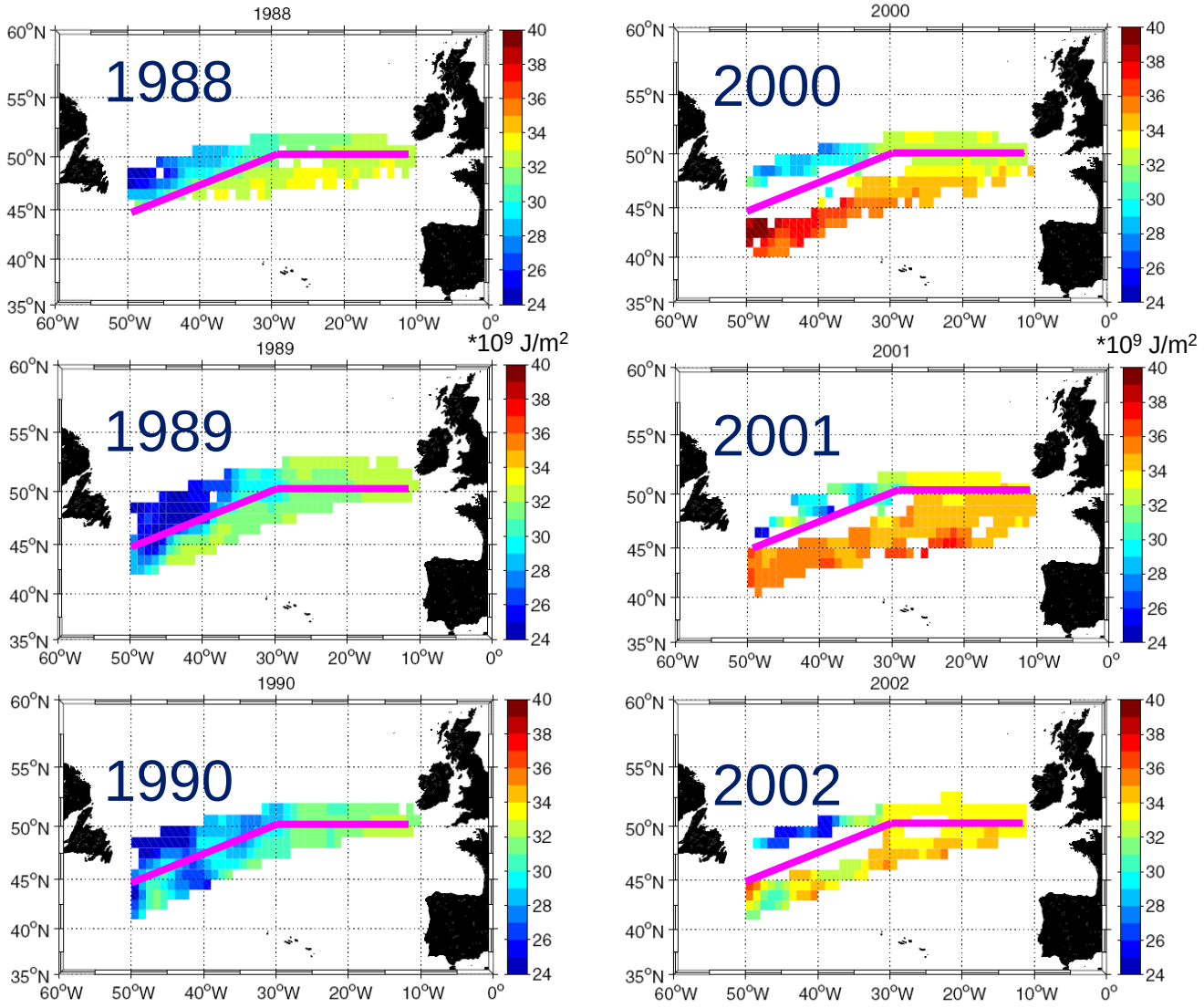
Thalassa cruise june 2005



Large errors produced by data mapping in areas of mesoscale eddies!

--> bias estimation has to be done on parallel profiles only

Heat content subpolar North Atlantic: changes



- section slightly shifted to south
- NAC more northward
- warmer North-East Atlantic

Heat content subpolar North Atlantic: Effect of Bias Correction

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