

The subtropical jet stream features over the North Atlantic

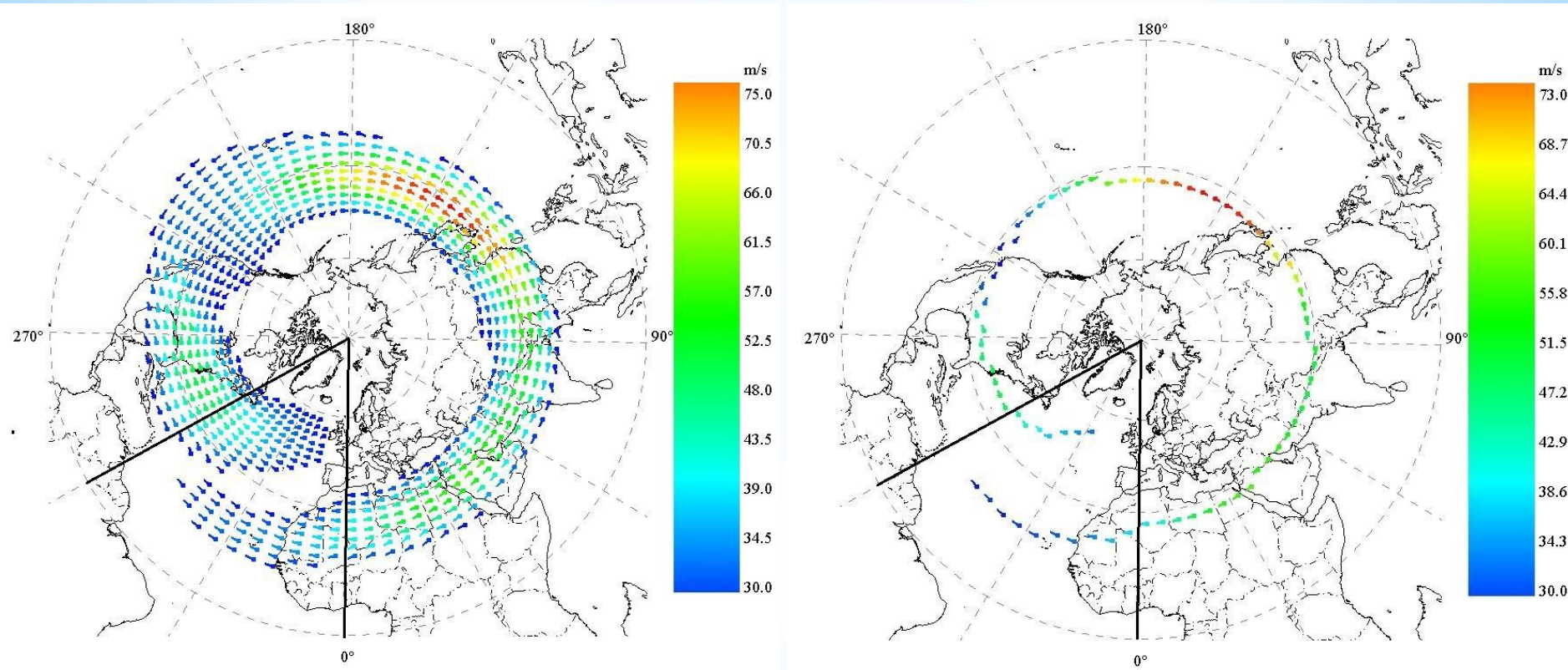
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The jet stream features

- Jet stream: a narrow stream of strong wind at 150-300 hPa levels, characterized by large vertical and horizontal wind shift and one or more maxima speed.
- Jet Stream Axis: a line of maximum wind speed found at one pressure level.
- Minimum value of the jet stream speed: 30 m/s.
- 200-hPa level: maximum wind speeds in jet streaks near 35° N (up to 100 m/s) → term «subtropical jet stream».
- Reanalysis data: NCEP/NCAR I (1958-2017), NCEP/DOE II (1979-2017), JRA-55 (1958-2017) and ERA-Interim (1979-2017).

The jet stream at 200 hPa level. Winter 1958-2017



Gloria L. Manney, Michaela I. Hegglin. Seasonal and Regional Variations of Long-Term Changes in Upper-Tropospheric Jets from Reanalyses // Journal of climate, vol. 31, 2018, pp. 423-448. DOI: [10.1175/JCLI-D-17-0303.1](https://doi.org/10.1175/JCLI-D-17-0303.1)

The time series trends of the jet stream axes

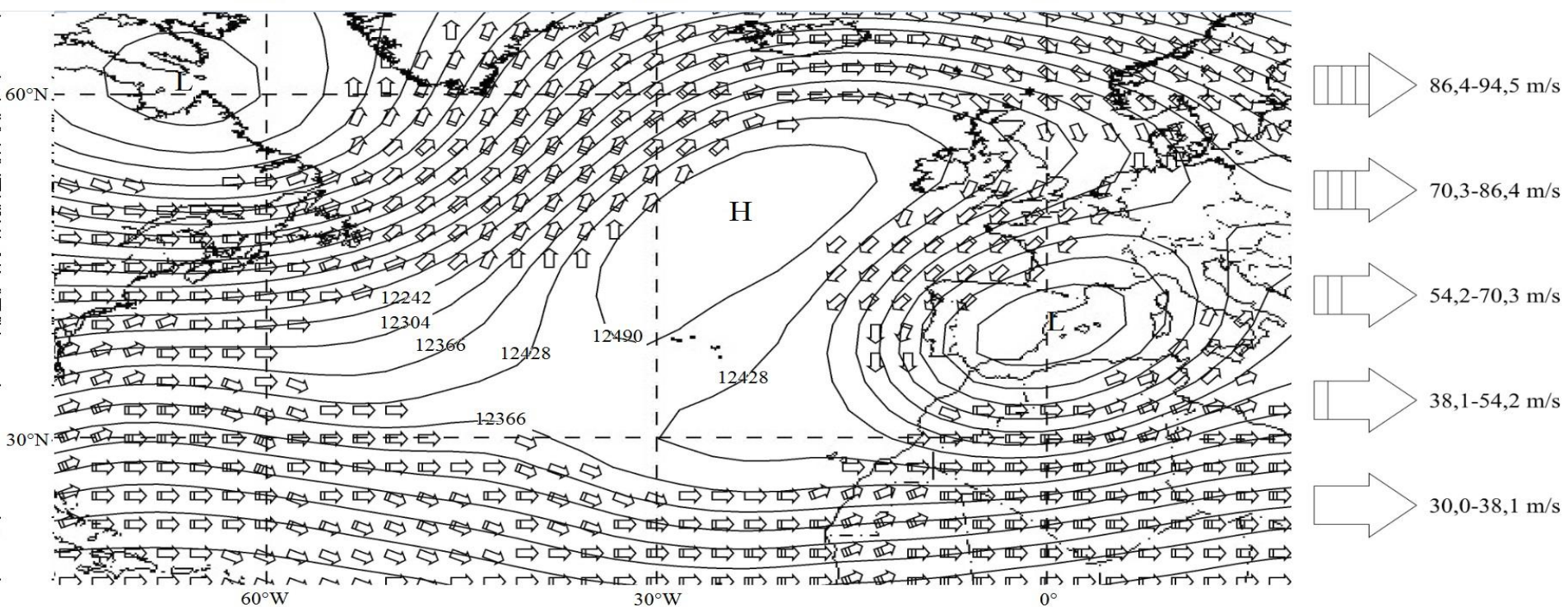
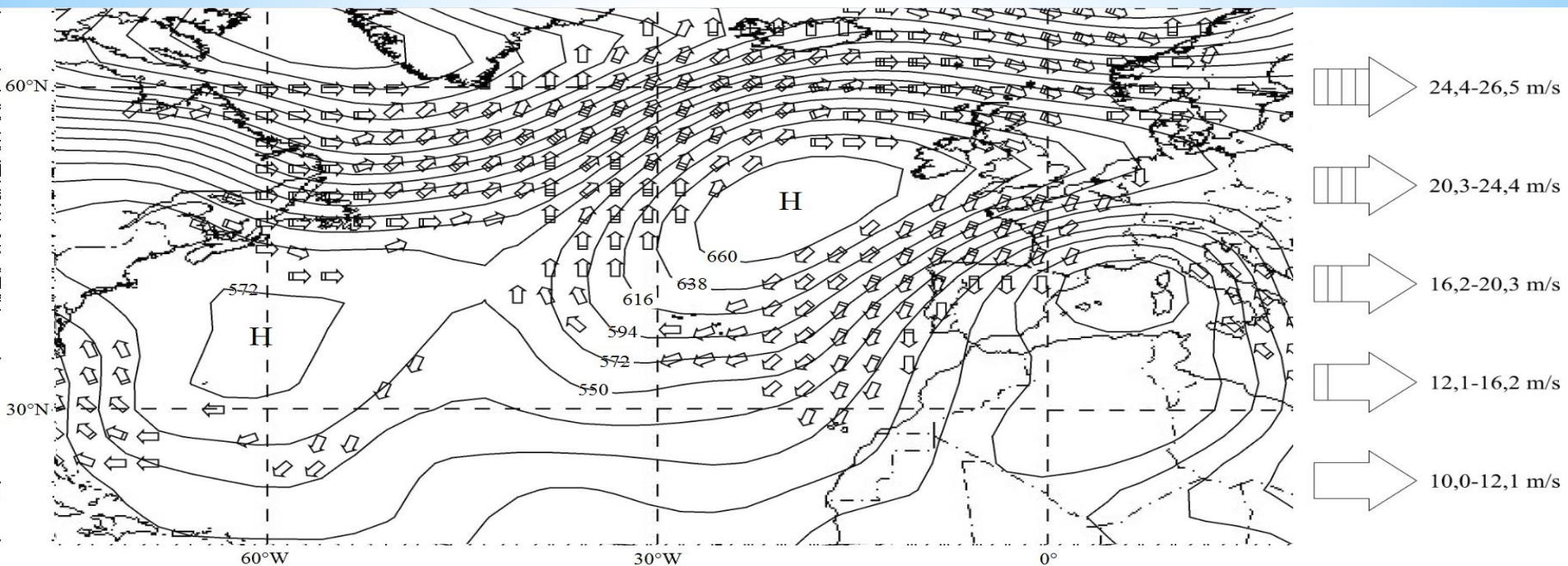
	Interval	The all sectors trends of the location, °N per decade	The Atlantic sector trends of the location, °N per decade
Winter period	1958-2017	0.09±0.10	-0.58±0.21
	1958-1979	0.20±0.34	-0.28±0.71
	1979-2000	0.45±0.55	0.22±1.02
	2000-2017	0.30±0.44	-1.28±1.19
Summer period	1958-2017	0.16±0.10	0.23±0.18
	1958-1979	0.14±0.55	0.90±0.49
	1979-2000	0.52±0.54	-0.03±0.65
	2000-2017	-0.28±0.57	-1.33±0.79

The time series trends of the jet stream axes

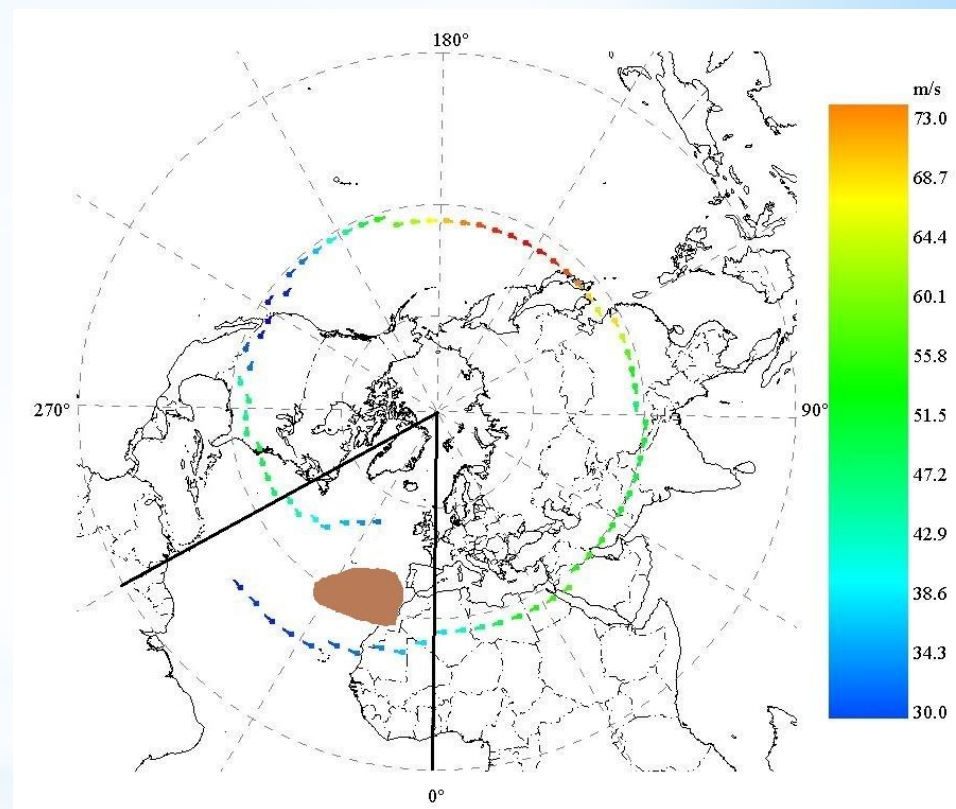
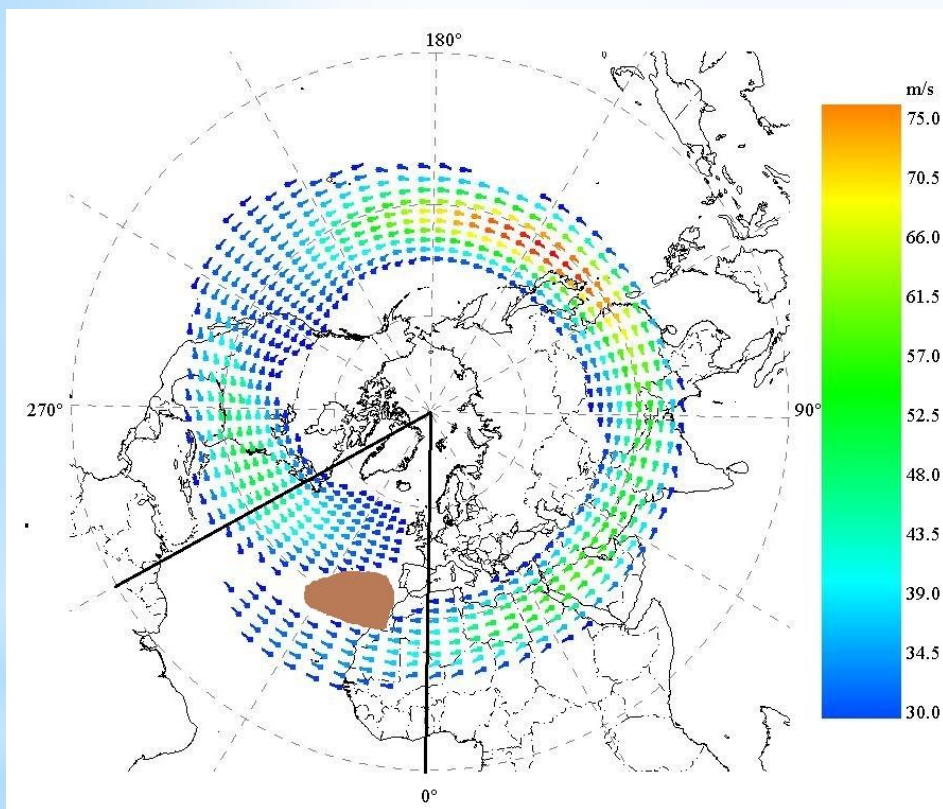
	Interval	The all sectors trends of speed, m/s per decade	The Atlantic sector trends of speed, m/s per decade
Winter period	1958-2017	0.51±0.21	0.33±0.20
	1958-1979	0.34±1.13	0.89±0.96
	1979-2000	0.22±0.95	0.24±1.00
	2000-2017	0.46±1.09	1.48±1.15
Summer period	1958-2017	0.18±0.07	0.35±0.11
	1958-1979	0.88±0.22	-0.25±0.61
	1979-2000	-0.15±0.26	0.72±0.81
	2000-2017	0.35±0.44	0.89±0.50

The correlations between jet stream axes and
0°-30° N & 30° N -60° N temperature gradient
(at 200-400 hPa levels)

	1958-2017	1958-1979	1979-2000	2000-2017
Winter period	0.72±0.17	0.66±0.25	0.77±0.33	0.72±0.4
Summer period	0.38±0.19	0.30±0.27	0.53±0.31	0.51±0.34



The jet stream and Azores High at 200 hPa level. Winter 1958-2017



The time series trends of the jet stream axes
and the Azores High location (at 200hPa) trends

	Interval	The Atlantic sector trends of the location, °N per decade	The trends of the Azores High location, °N per decade
Winter period	1958-2017	-0.58±0.21	-0.54±0.33
	1958-1979	-0.28±0.71	0.43±1.72
	1979-2000	0.22±1.02	-0.82±0.87
	2000-2017	-1.28±1.19	-1.99±0.81
Summer period	1958-2017	0.23±0.18	0.01±0.02
	1958-1979	0.90±0.49	0.01±0.04
	1979-2000	-0.03±0.65	0.02±0.04
	2000-2017	-1.33±0.79	0.00±0.05



Thanks for
your
attention!