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Supplement of

Reconciling North Atlantic climate modes: revised monthly indices for the East Atlantic and the Scandinavian patterns beyond the 20th century

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Table S1: Summary of meteorological stations used in this study. Daily datasets were used to calculate monthly series. Grey rows correspond to the selected stations for this study.

Station Name	Coordinates	Station Data Availability Time Period	Selected Time Interval	Resolution	Monthly missing data (> 5 days per month)	Measure	Source	Highest correlation with corresponding EOFs from all reanalysis products
3953 VALENTIA	51.93°N 10.25°W 14 masl	1866-2002	1866-1938	Monthly	05/1872; 05/1873; 05/1874; 12/1938	Mean sea level pressure, 0-0 UTC	Met Éireann	0.87 (ERAi)
305/2275 VALENTIA	51.94°N 10.22°W 9 masl	1939-2016	1939-2016	Daily	----	Sea level pressure, mean 18-18 UTC	ECA&D	
2230 BERGEN/FLESLAND	60.28°N 05.23E 48 masl	1957-2017	1957-2017	Daily	----	Sea level pressure, mean 18-18 UTC	ECA&D	0.85 (ERA20C)
265 BERGEN/FLORIDA	60.38°N 5.33°E 12 m asl	1901-2017	1901-2017	Daily	----	Sea level pressure, mean 18-18 UTC	ECA&D	0.87 (ERA20C)
1047 SAUDA	59.65°N 06.37°E 5 masl	1957-2017	1957-2017	Daily	9/2007; 9/2016-03/2017	Sea level pressure, mean 18-18 UTC	ECA&D	0.85 (ERA20C)
2685 SLATTEROY FYR	59.90°N 05.07°E 25 masl	1957-2017	1957-2017	Daily	10/1991; 10/1999-02/2000; 01-02/2005;	Sea level pressure, mean 18-18 UTC	ECA&D	0.87 (ERA20C)
194 UTSIRA FYR	59.30°N 04.88°E 55 masl	1957-2017	1957-2017	Daily	03/2002	Sea level pressure, mean 18-18 UTC	ECA&D	0.87 (ERA20C)

Table S2: Percentage of SLP variability explained by the corresponding EOF during the given season and for each reanalysis dataset. The "total" column is the variability explained by adding the three main EOFs. EOF1 corresponds always to the NAO. EOF2 and EOF3 correspond to the EA and the SCA, respectively, except in MAM when the EOF3 presents the EA pattern and SCA is not reflected by the three first EOFs (see also Fig. 1 and S1-S4).

	20CRv2c				**ERA-20C**				**ERA-40**				**ERA-interim**				**NCEP/NCAR**			
	EOF1	**EOF2**	**EOF3**	**Total**	**EOF1**	**EOF2**	**EOF3**	**Total**	**EOF1**	**EOF2**	**EOF3**	**Total**	**EOF1**	**EOF2**	**EOF3**	**Total**	**EOF1**	**EOF2**	**EOF3**	**Total**
DJF	39	19	13	**71**	40	19	13	**72**	43	17	13	**73**	46	16	13	**75**	41	17	13	**71**
MAM	33	13	10	**56**	37	15	12	**64**	33	18	14	**65**	40	16	10	**66**	34	18	11	**63**
JJA	30	17	14	**61**	35	11	10	**56**	36	11	09	**56**	39	12	10	**61**	35	10	09	**54**
SON	30	17	14	**61**	28	19	14	**61**	27	20	13	**60**	28	21	14	**63**	26	19	14	**59**

Table S3:- Correlation coefficients between seasonal (3m) EOFs from all the employed reanalysis datasets. Note: all correlations with p-val≤0.01 except [(a)] 0.01<p-val≤0.05; [(b)] 0.05<p-val≤0.1; and [(c)] p-val>0.1. *EOF2 and EOF3 for JJA have different geographical representation (see main text for further details). ** ERA-interim's EOF2 and EOF3 for JJA have been swapped in order to compare EOFs with the same meaning based on their geographical representation.

EOF1 (DJF)	**20CRv2c**	**ERA-20C**	**ERA-40**	**ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.99	0.99	0.99	0.99
ERA-20C		1	1	0.99	1
ERA-40			1	0.98	0.99
ERA-interim				1	0.99
NCEP/NCAR					1

EOF1 (MAM)	**20CRv2c**	**ERA-20C**	**ERA-40**	**ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.96	0.98	0.99	0.97
ERA-20C		1	0.99	0.99	0.96
ERA-40			1	1	0.97
ERA-interim				1	0.99
NCEP/NCAR					1

EOF2 (DJF)	**20CRv2c**	**ERA-20C**	**ERA-40**	**ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.99	0.98	0.96	0.99
ERA-20C		1	0.99	0.97	0.99
ERA-40			1	0.96	0.99
ERA-interim				1	0.95
NCEP/NCAR					1

EOF2 (MAM)	**20CRv2c**	**ERA-20C**	**ERA-40**	**ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.89	0.96	0.94	0.96
ERA-20C		1	0.98	0.99	0.93
ERA-40			1	0.98	0.95
ERA-interim				1	0.95
NCEP/NCAR					1

EOF3 (DJF)	**20CRv2c**	**ERA-20C**	**ERA-40**	**ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.98	0.98	0.90	0.99
ERA-20C		1	0.98	0.93	0.98
ERA-40			1	0.94	0.99
ERA-interim				1	0.91
NCEP/NCAR					1

EOF3 (MAM)	**20CRv2c**	**ERA-20C**	**ERA-40**	**ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.92	0.96	0.83	0.97
ERA-20C		1	0.96	0.88	0.96
ERA-40			1	0.95	0.99
ERA-interim				1	0.89
NCEP/NCAR					1

EOF1 (JJA)	**20CRv2c**	**ERA-20C**	**ERA-40**	**ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.91	0.97	0.98	0.97
ERA-20C		1	0.97	0.97	0.96
ERA-40			1	0.99	0.99
ERA-interim				1	0.98
NCEP/NCAR					1

EOF1 (SON)	**20CRv2c**	**ERA-20C**	**ERA-40**	**ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.91	0.96	0.93	0.92
ERA-20C		1	0.97	0.95	0.93
ERA-40			1	0.99	0.99
ERA-interim				1	0.99
NCEP/NCAR					1

***EOF2 (JJA)**	**20CRv2c**	**ERA-20C**	**ERA-40**	****ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.85	0.90	0.87	0.92
ERA-20C		1	0.89	0.84	0.87
ERA-40			1	0.89	0.92
****ERA-interim**				1	0.94
NCEP/NCAR					1

EOF2 (SON)	**20CRv2c**	**ERA-20C**	**ERA-40**	**ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.98	0.95	0.92	0.89
ERA-20C		1	0.98	0.96	0.94
ERA-40			1	0.97	0.98
ERA-interim				1	0.97
NCEP/NCAR					1

***EOF3 (JJA)**	**20CRv2c**	**ERA-20C**	**ERA-40**	****ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.60	0.76	0.69	0.45
ERA-20C		1	0.18a	0.94	0.87
ERA-40			1	0.25a	0.05b
****ERA-interim**				1	0.94
NCEP/NCAR					1

EOF3 (SON)	**20CRv2c**	**ERA-20C**	**ERA-40**	**ERA-interim**	**NCEP/NCAR**
20CRv2c	1	0.96	0.98	0.94	0.97
ERA-20C		1	0.93	0.89	0.91
ERA-40			1	0.93	0.98
ERA-interim				1	0.95
NCEP/NCAR					1

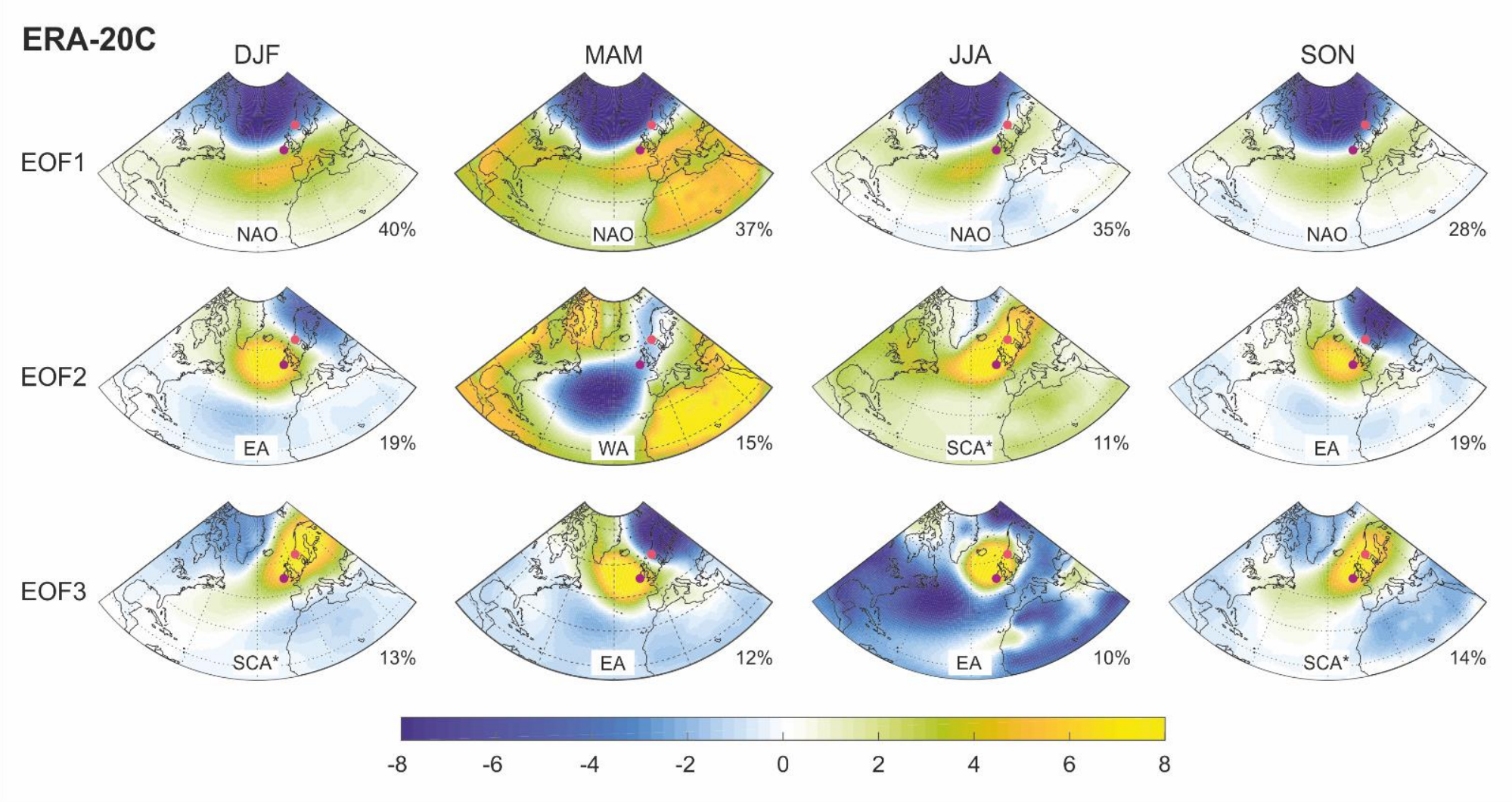

Figure S1: EOF loadings based on monthly SLP data (ERA-20C dataset; Poli et al., 2016). Each column represents a 3-month season. The percentages at the bottom right of each map are the variability explained by the corresponding EOF (rows) at any given season (columns) as shown in Table S2. The text at the bottom of each map identifies the observed pattern. Pink (purple) dots show the location of Bergen Florida (Valentia Observatory) stations as listed in Table 1. Figures S1-S4 show the same maps for the other four reanalysis products in Table 2.

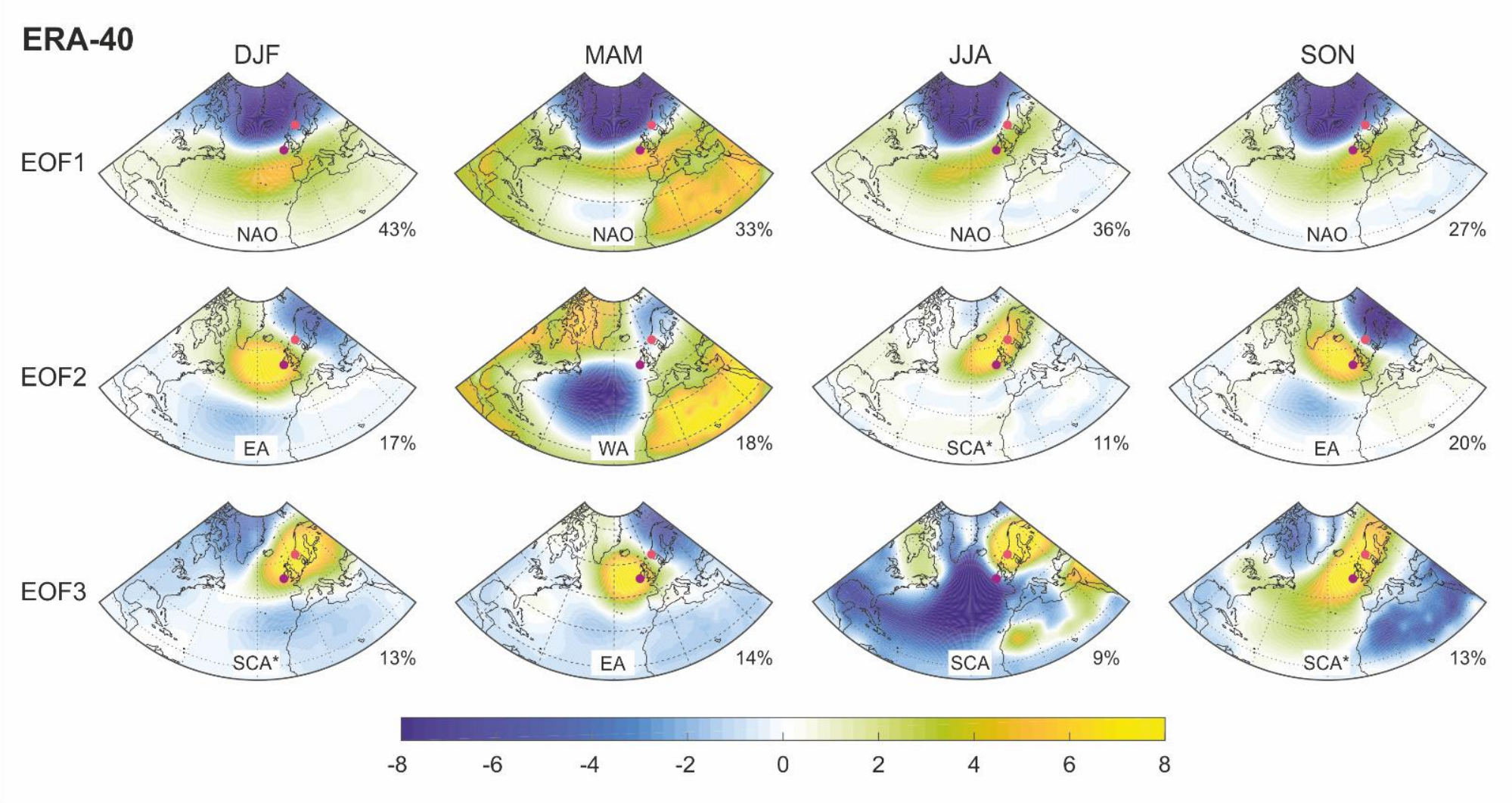

Figure S2: EOF loadings based on monthly SLP data (ERA-40 dataset; Uppala et al., 2005). Each column represents a 3-month season. The percentages at the bottom right of each map are the variability explained by the corresponding EOF (rows) at any given season (columns) as shown in Table S2. The text at the bottom of each map identifies the observed pattern. Pink (purple) dots show the location of Bergen Florida (Valentia Observatory) stations as listed in Table 1. Figures S1-S4 show the same maps for the other four reanalysis products in Table 2.

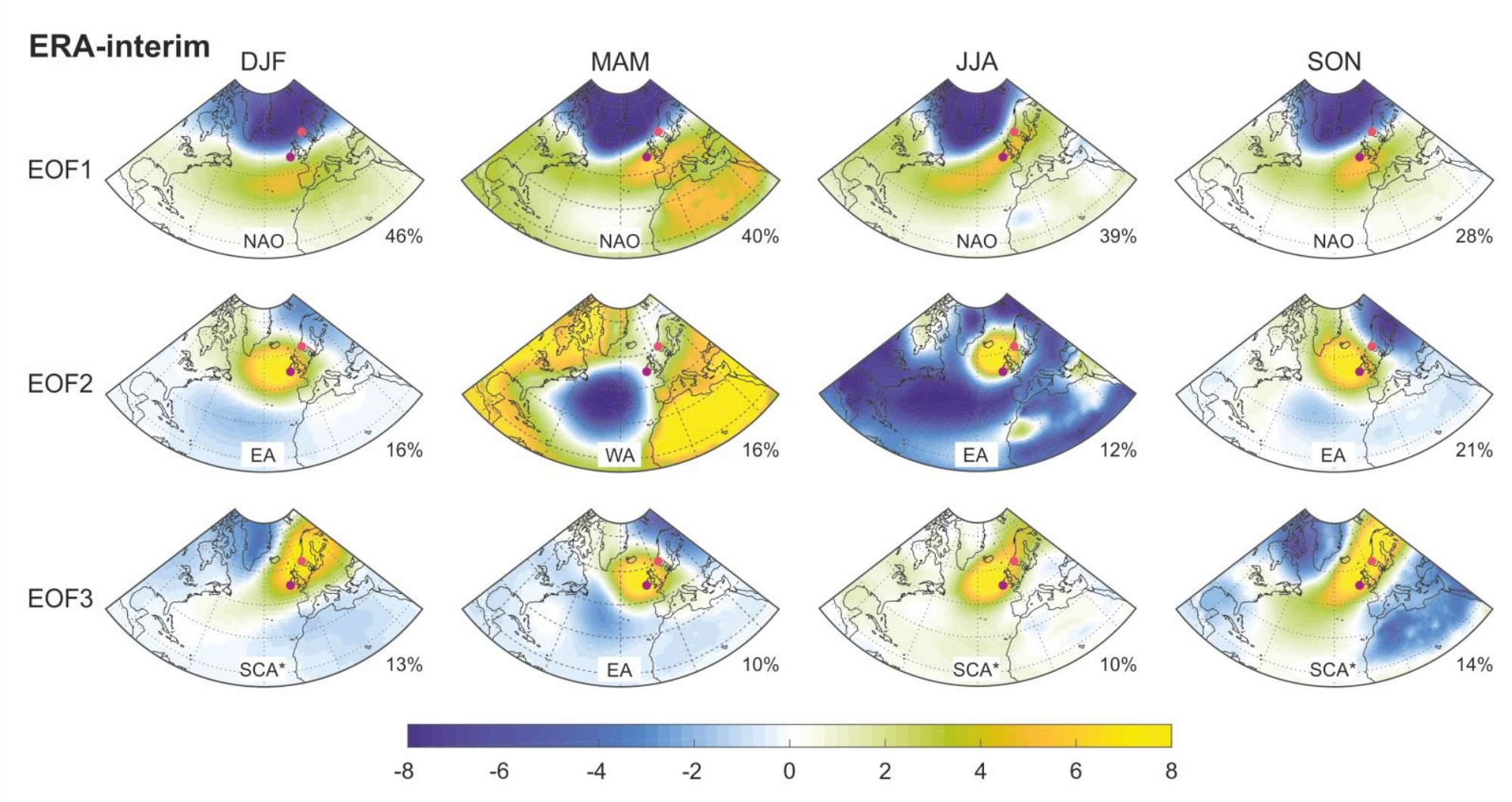

Figure S3: EOF loadings based on monthly SLP data (ERA-interim dataset; Dee et al., 2011). Each column represents a 3-month season. The percentages at the bottom right of each map are the variability explained by the corresponding EOF (rows) at any given season (columns) as shown in Table S2. The text at the bottom of each map identifies the observed pattern. Pink (purple) dots show the location of Bergen Florida (Valentia Observatory) stations as listed in Table 1. Figures S1-S4 show the same maps for the other four reanalysis products in Table 2.

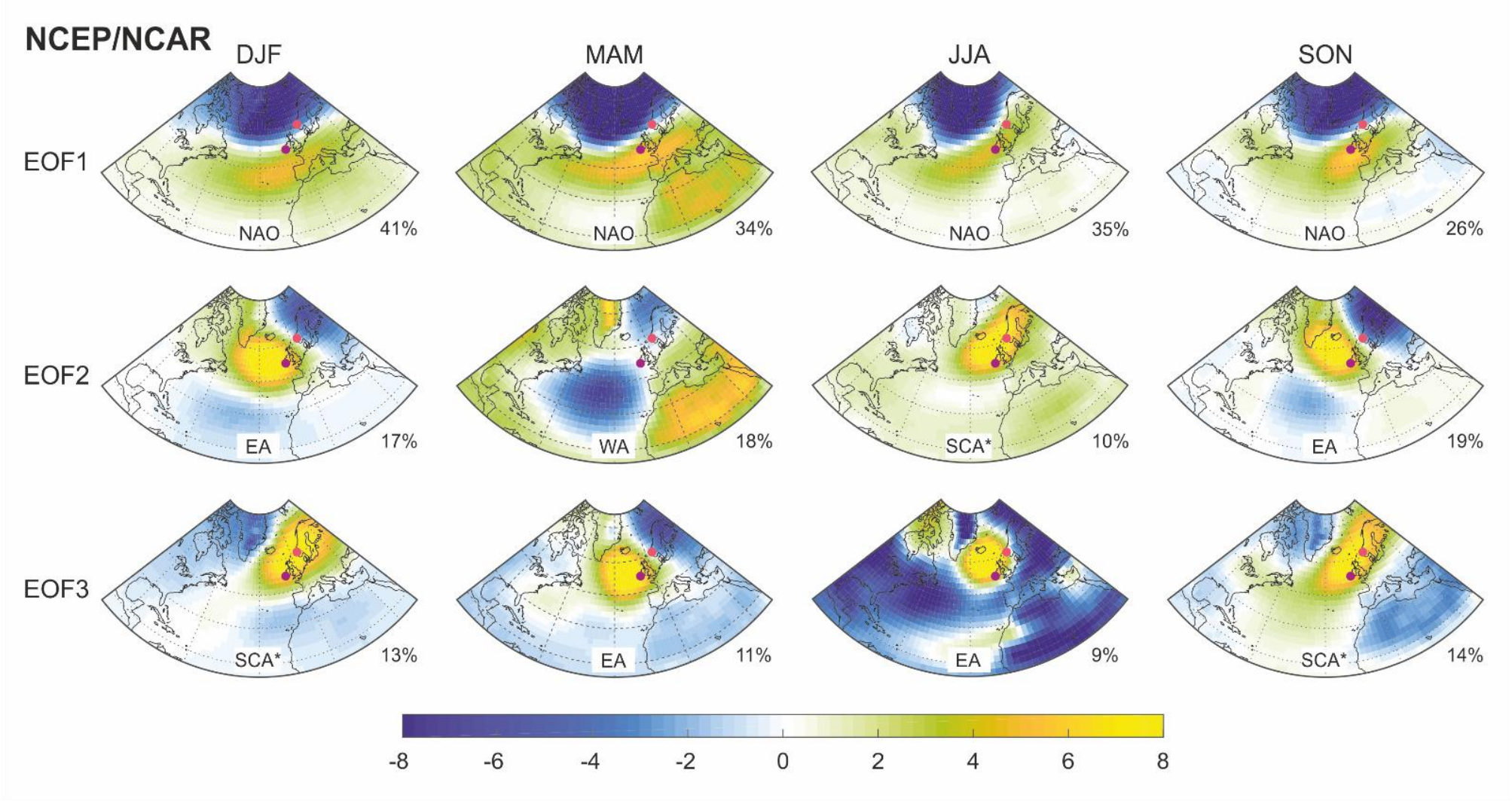

Figure S4: EOF loadings based on monthly SLP data (NCEP/NCAR dataset; Kalnay et al., 1996). Each column represents a 3-month season. The percentages at the bottom right of each map are the variability explained by the corresponding EOF (rows) at any given season (columns) as shown in Table S2. The text at the bottom of each map identifies the observed pattern. Pink (purple) dots show the location of Bergen Florida (Valentia Observatory) stations as listed in Table 1. Figures S1-S4 show the same maps for the other four reanalysis products in Table 2.