WP2 “Wind energy fields and ice conditions”

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1. WP2 – aims, partners, plans, stages
2. WP2 – overall progress
3. WP2 – UL progress

Jūrmala, 5-Oct-11, GORWIND progress meeting

1. AIMS AND PARTNERS

Numerical climate projections – wind+ (UL)

Satellite data analysis – wind&ice (MSI)

Mobilisation of in-situ data (TU, UL)

Identification of parameters relevant for wind farming (TU)

Mapping sea wind to coastal areas (TBD)

WASP modeling (TU)

Analysis and production of wind/ice maps (all)

Production of contents for spatial planning tool (all)

1. TIME SCHEDULE VS TASKS

STAGE 1: mobilisation

Mobilisation of in situ data (national, EU, private)

Identification of (derived) parameters relevant for wind farming

Selection of climate projections (periods, scenarios, sources)

Mobilisation of numerical climate projections

Mobilising and preprocessing of satellite data for wind and ice retrieval

STAGE 2: development of methods

STAGE 3: implementation of methods = production

STAGE 4: postproduction

1. TIME SCHEDULE VS TASKS

STAGE 2: development of methods

Method for wind retrieval from SAR (MSI)

Algorithm for ice map retrieval from sat img (MSI)

Method for extrapolation to coastal areas (all)

Methodics for WASP application (TU)

Configuration and set-up of WASP (TU)

Methods for deriving parameters from RCM (UL)

Methods for skill assessment of RCM (UL)

Methods for bias correction of RCM (UL)

2. PROGRESS: RELEVANT DECISIONS / RESULTS

1. WP2 shall consider three time periods:

1981-2010 (contemporary climate – in situ observations, data from regional climate models),

2002 – 2010 (for satellite data, HIRLAM operational model)

2021-2050 (near future – data from regional climate models)

2. The climate change issue will be considered in time slices (as opposite to continuous change)

3. The contemporary time slices (1961-1990 or 1971-2000) as recommended by WMO will be neglected

4. The ERANET data will be neglected

2. PROGRESS: RELEVANT DECISIONS / RESULTS

5. RCM ensemble from EU project ENSEMBLES will be considered. Climate change storeline A1, scenario family A1B. Relevant data has been downloaded.

6. High resolution HIRLAM model results will be applied for analysis (recent years)

7. SAT imagery has been downloaded

8. Methodology for WASP application has been developed

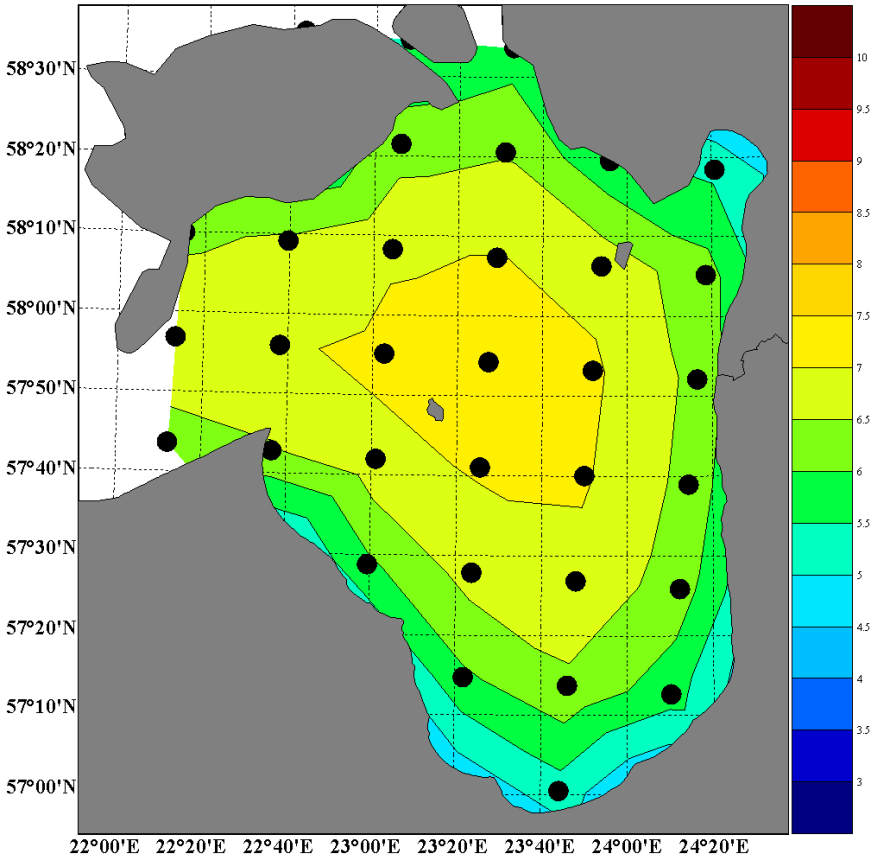
3. PROGRESS: UL for stage 2

1. Deriving parameters from RCM: methods mostly done. (except Turbulence intensity as used in wind farming)
2. Skill assessment of RCM: via ensemble analysis (Kuresaare by Juris).

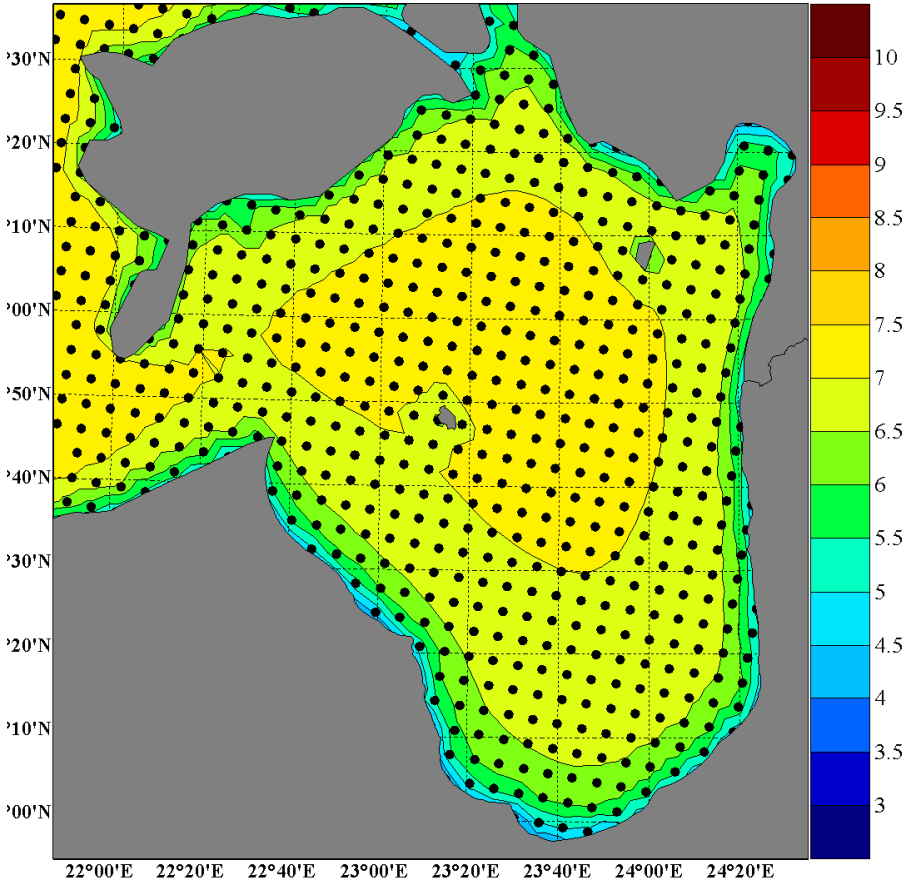
3. BIAS correction – ready. It is needed for precipitation, temperature, humidity. May withheld for wind / gusts.

4. Nearshore areas – the development of methods in progress. Possible use of WASP.

Comparison of operational HIRLAM model and RCM

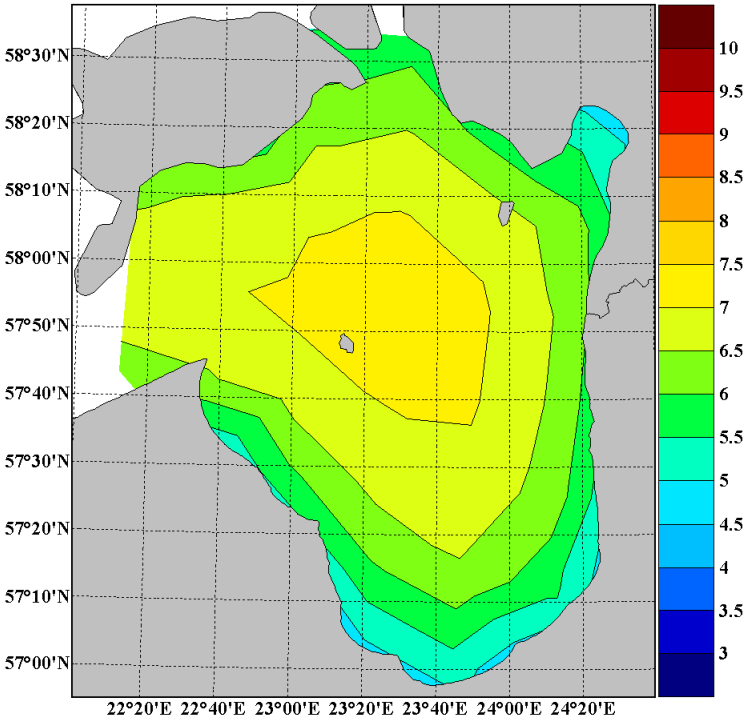


Median of annual wind speed calculated by RCM (1961-1990)

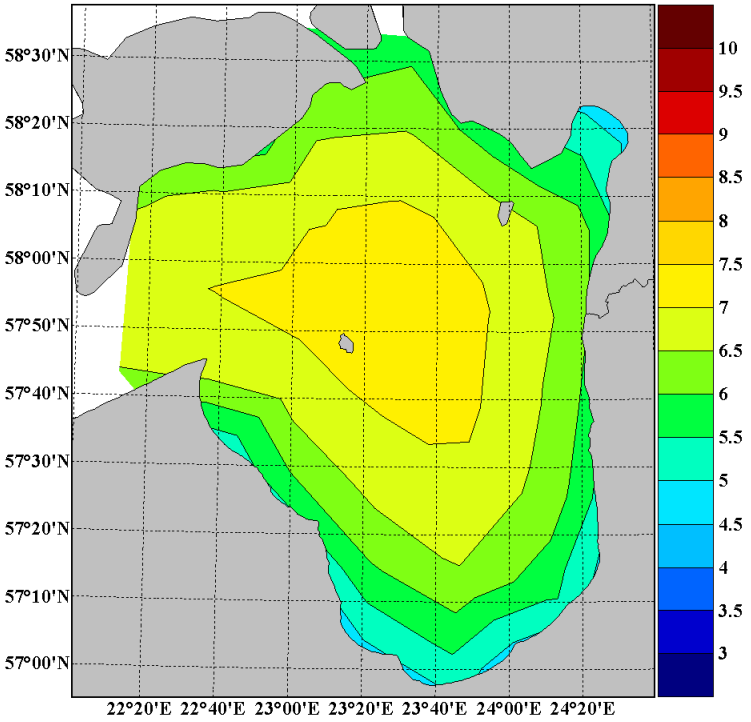


Annual average wind from DMI HIRLAM 2008-2010 at 10m

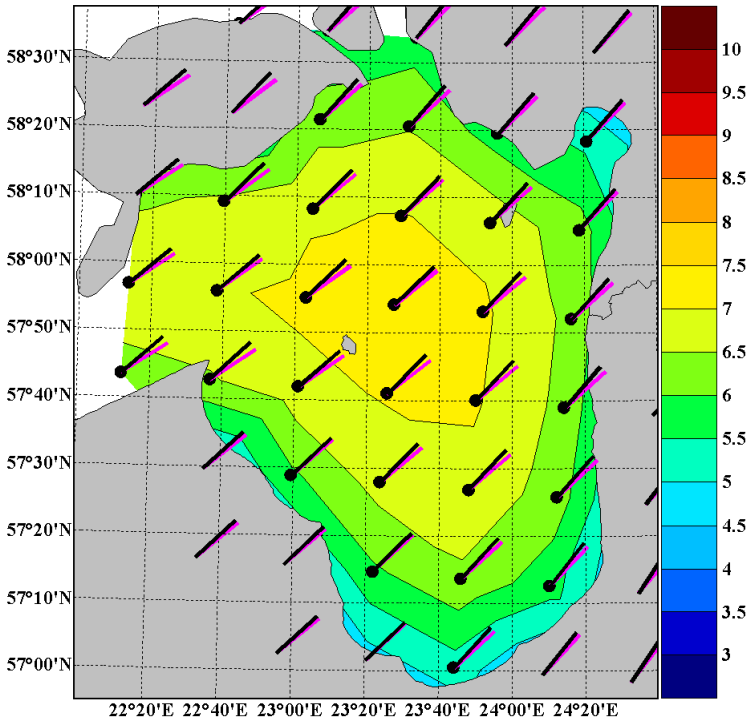
Annual average wind speed



1981-2010



2021-2050

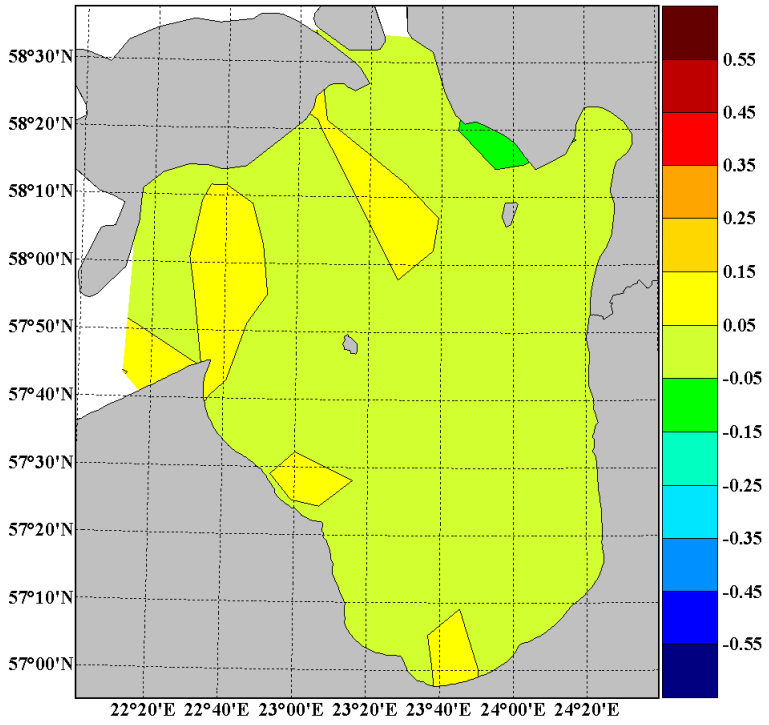


Annual ave direction

Black – 1981-2010

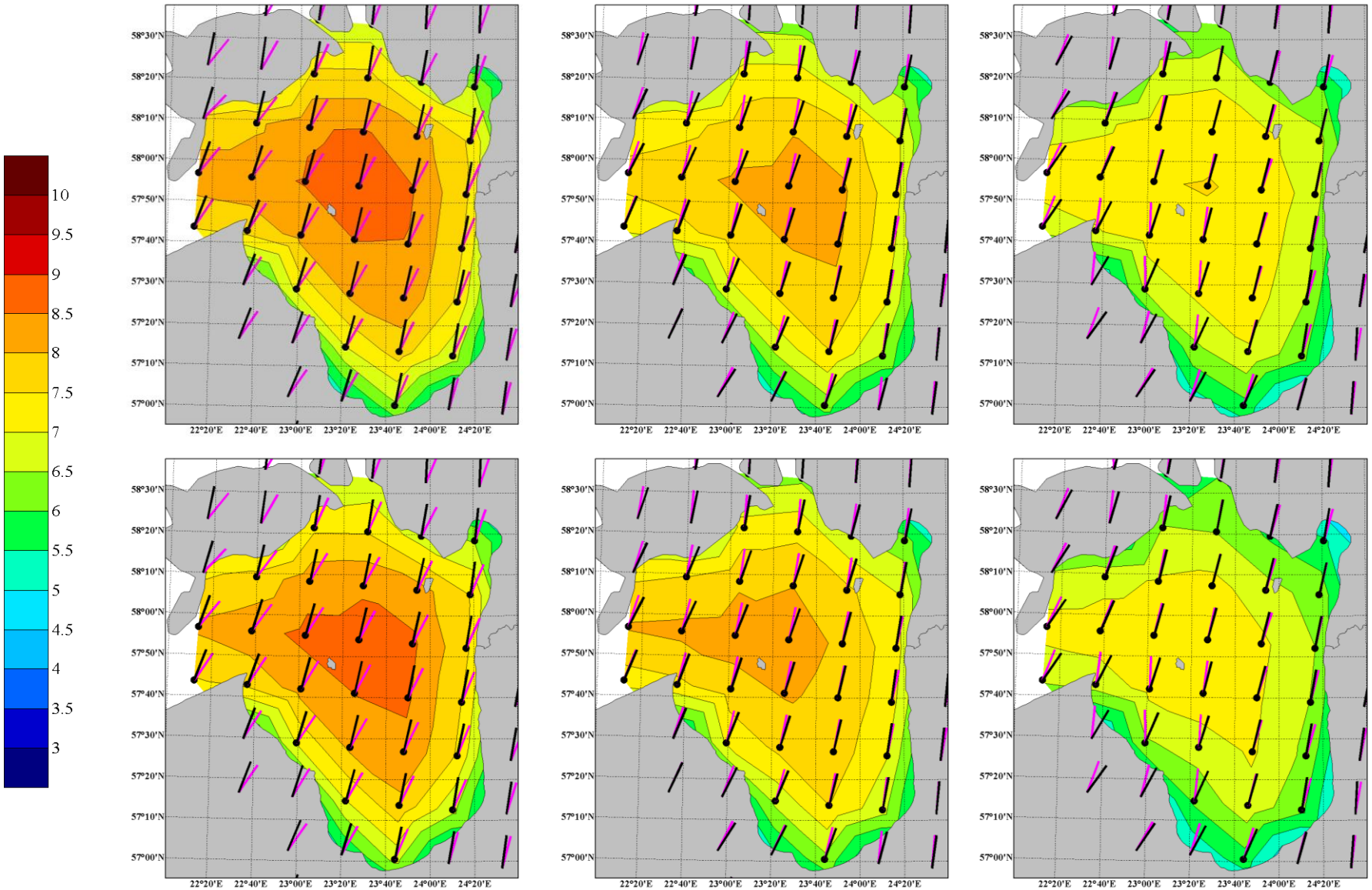
Magenta – 2021-2050

Colors – wind speed 1981-2010

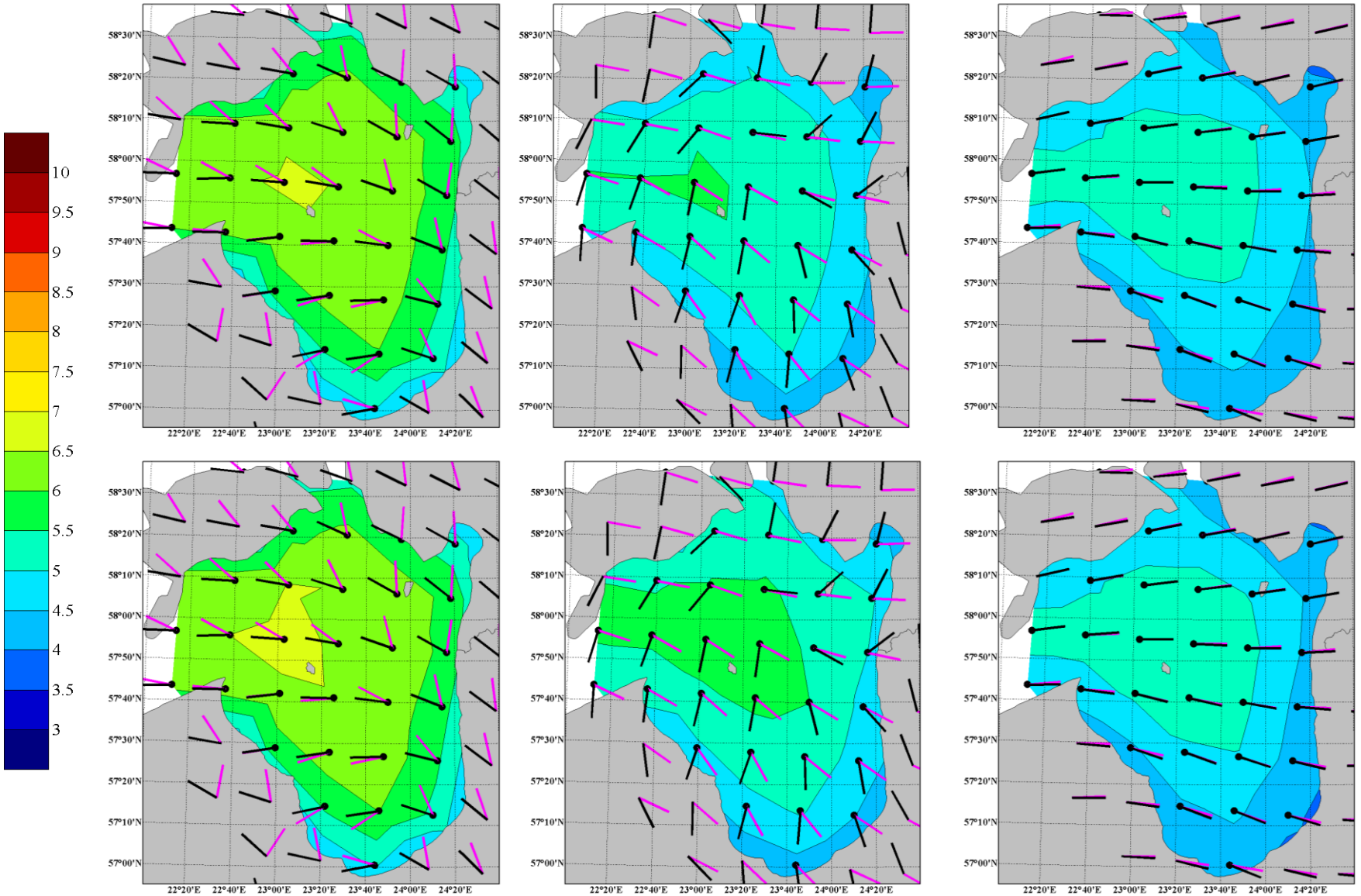


Changes in annual wind speed

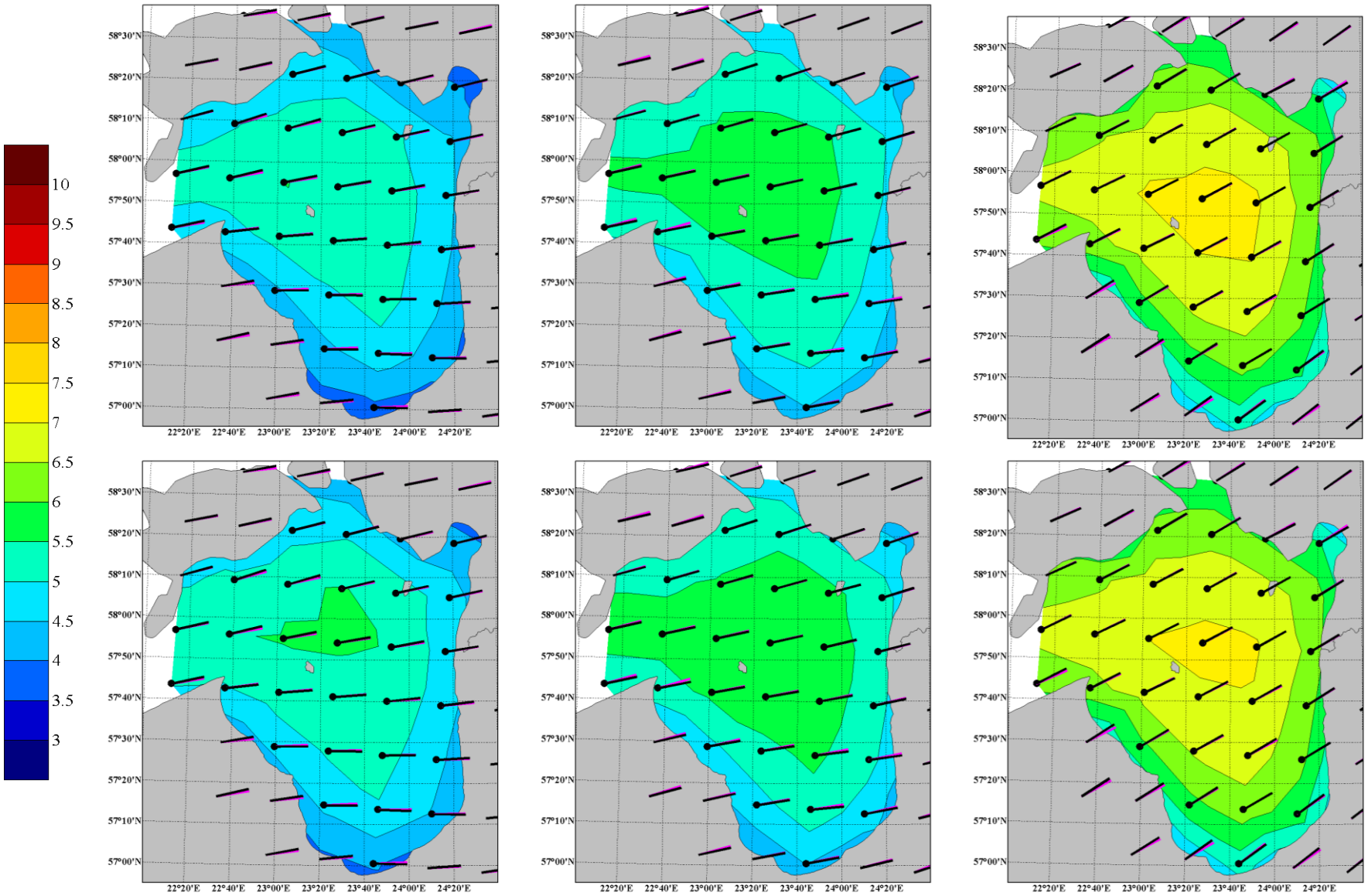
Jan, Feb, Mar, upper – 1981-2010, lower 2021-2050



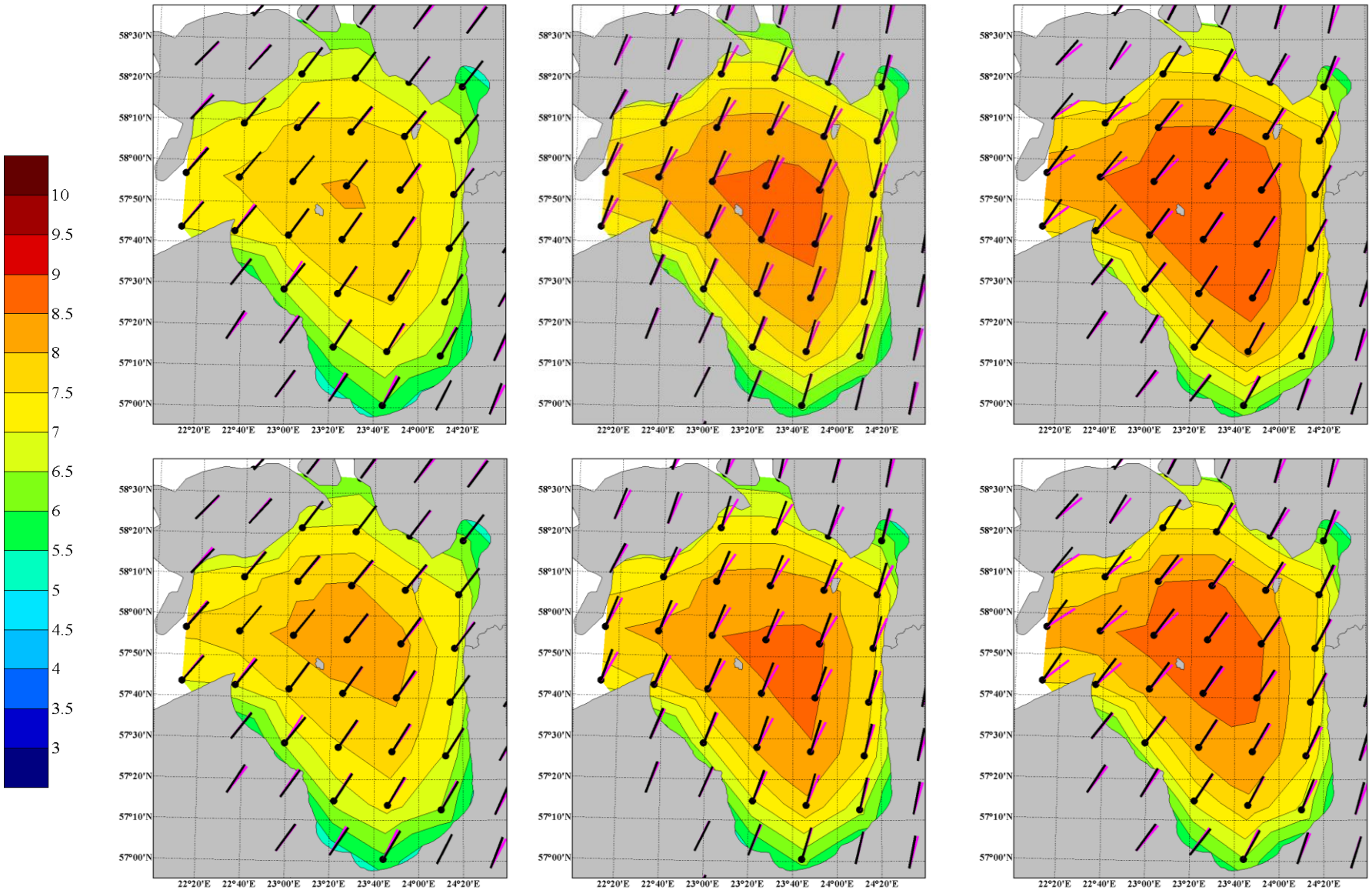
Apr, May, Jun, upper – 1981-2010, lower 2021-2050



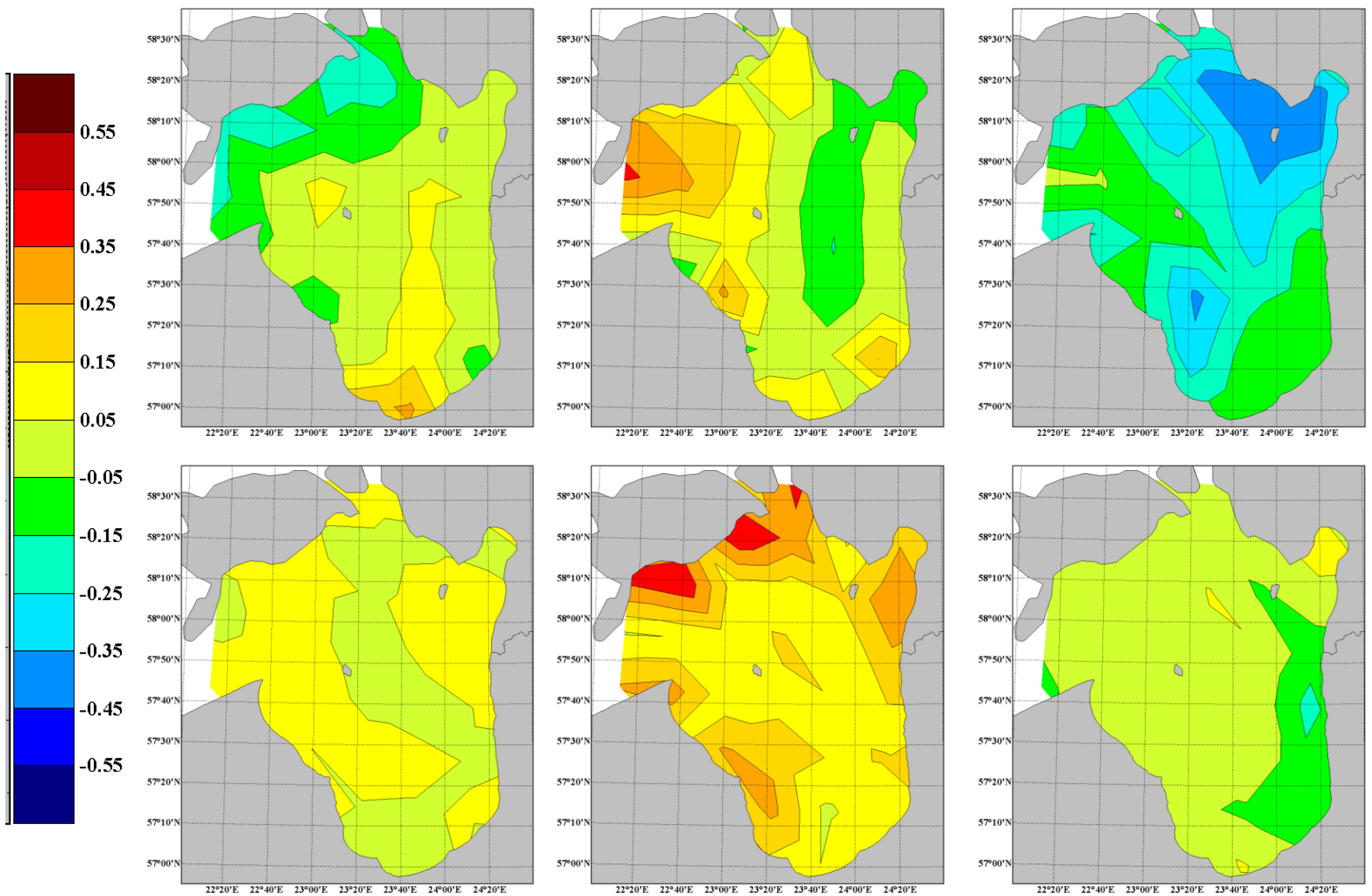
Jul, Aug, Sep, upper – 1981-2010, lower 2021-2050



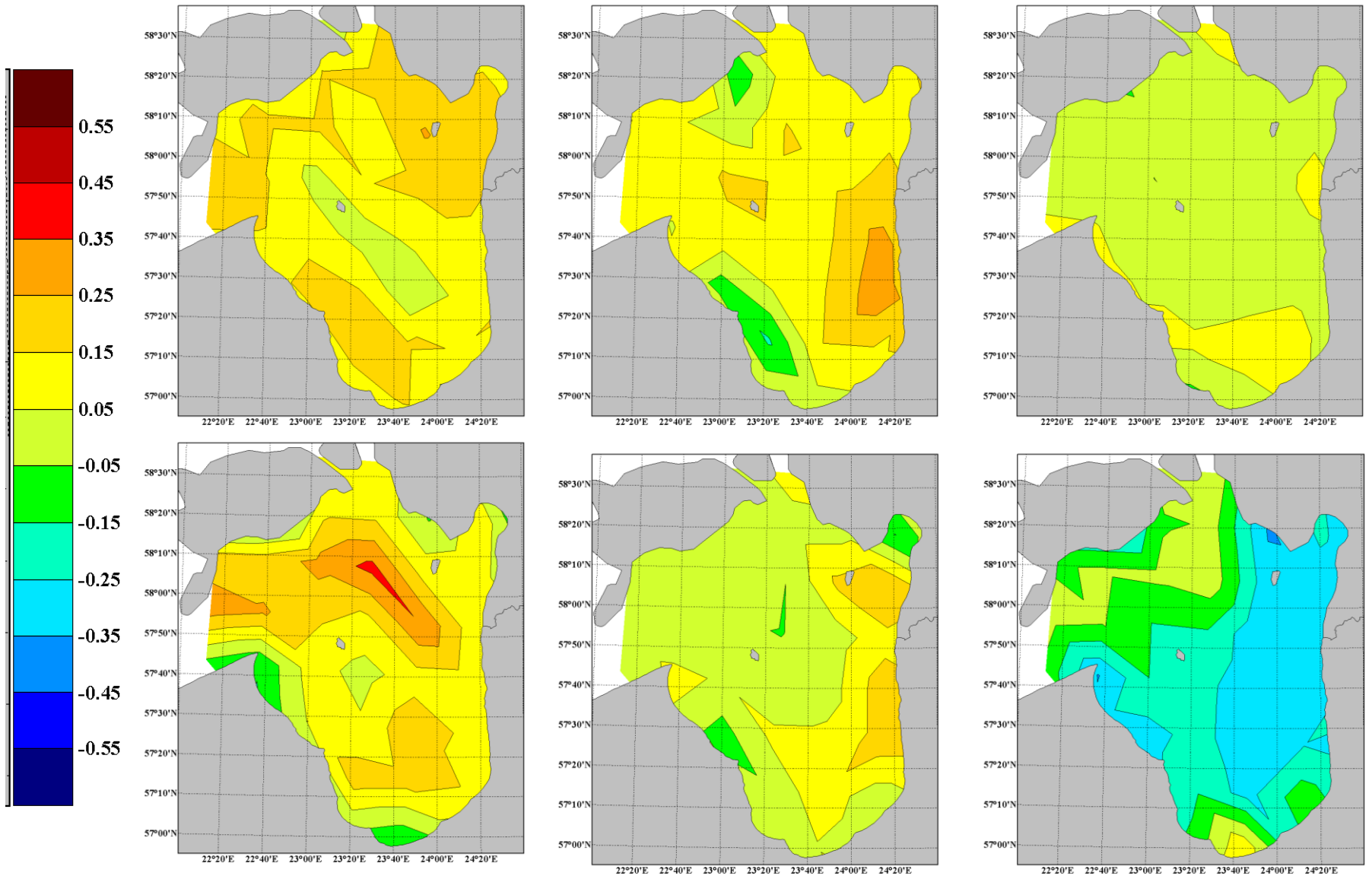
Oct, Nov, Dec, upper – 1981-2010, lower 2021-2050

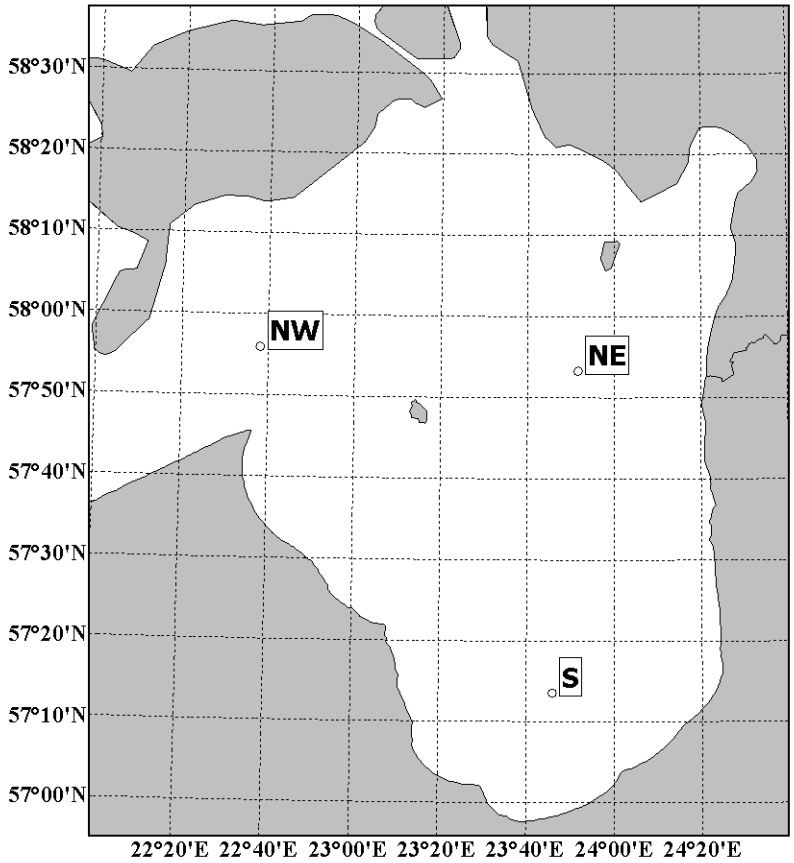


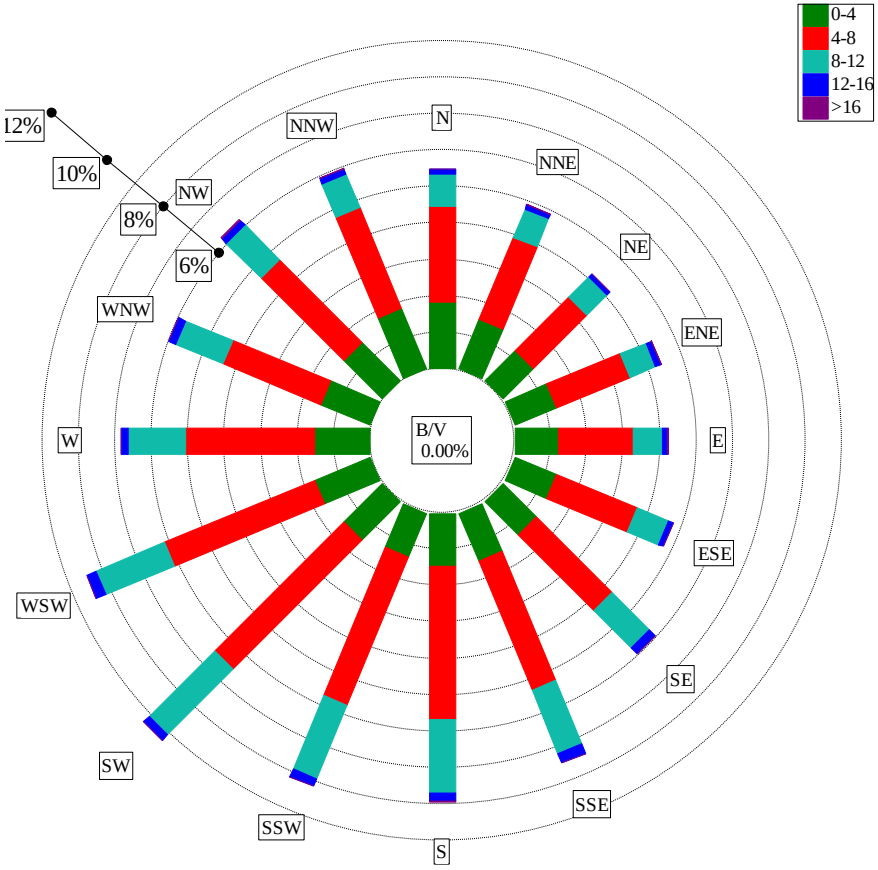
Wind speed changes, Jan,Feb,Mar, Apr,May,Jun



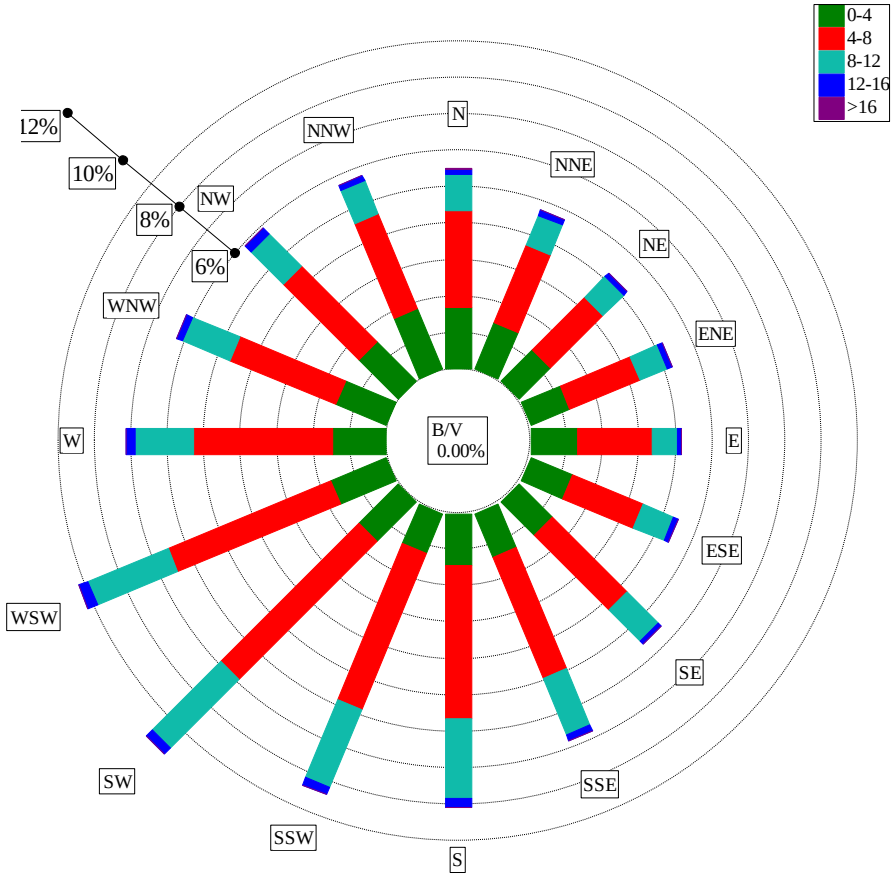
Wind speed changes, Jul,Aug,Sep, Oct,Nov,Dec



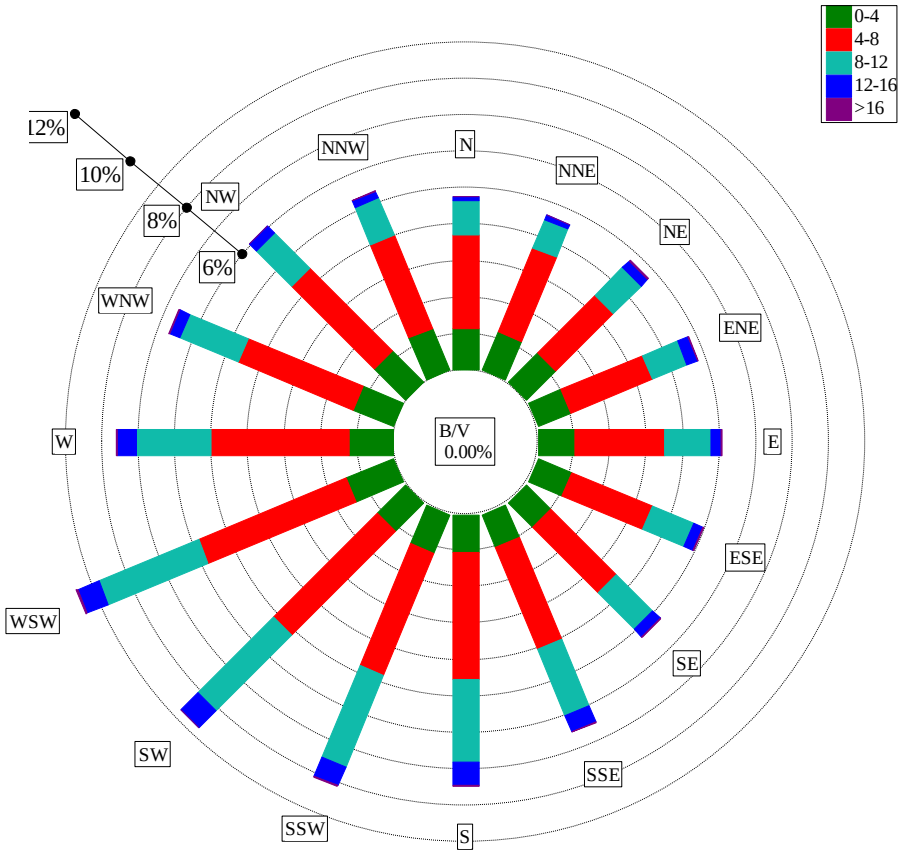

58°30'N
58°20'N
58°10'N
58°00'N
57°50'N
57°40'N
57°30'N
57°20'N
57°10'N
57°00'N
22°20'E
22°40'E
23°00'E
23°20'E
23°40'E
24°00'E
24°20'E
NW
NE
S



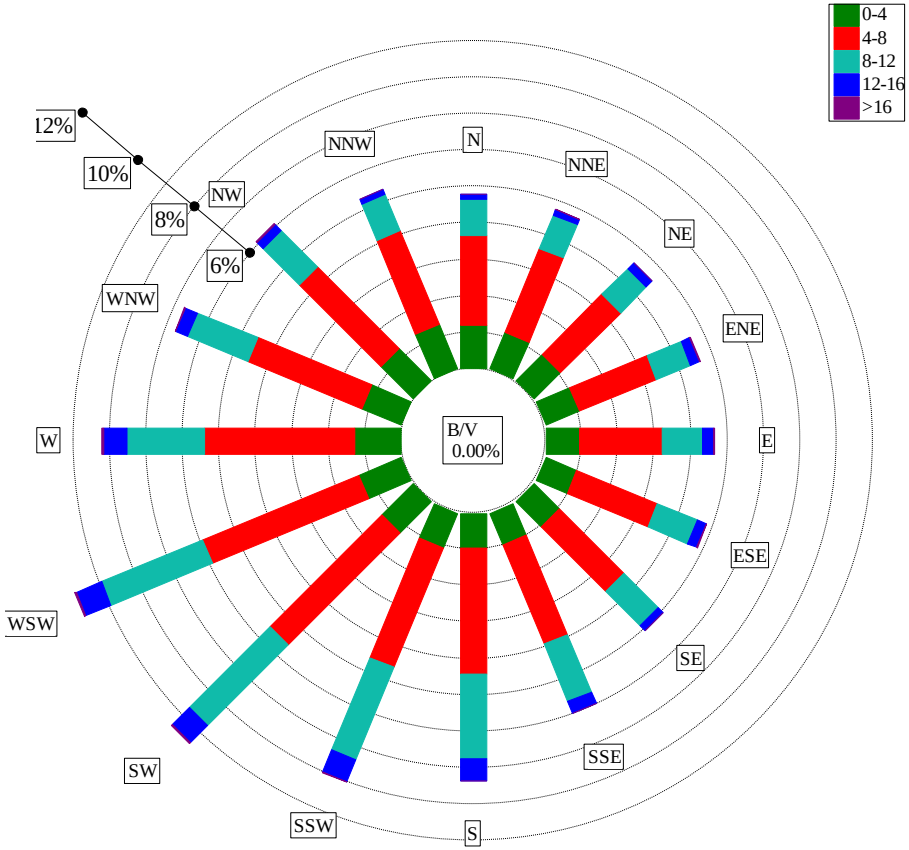
GoR South, 1981-2010



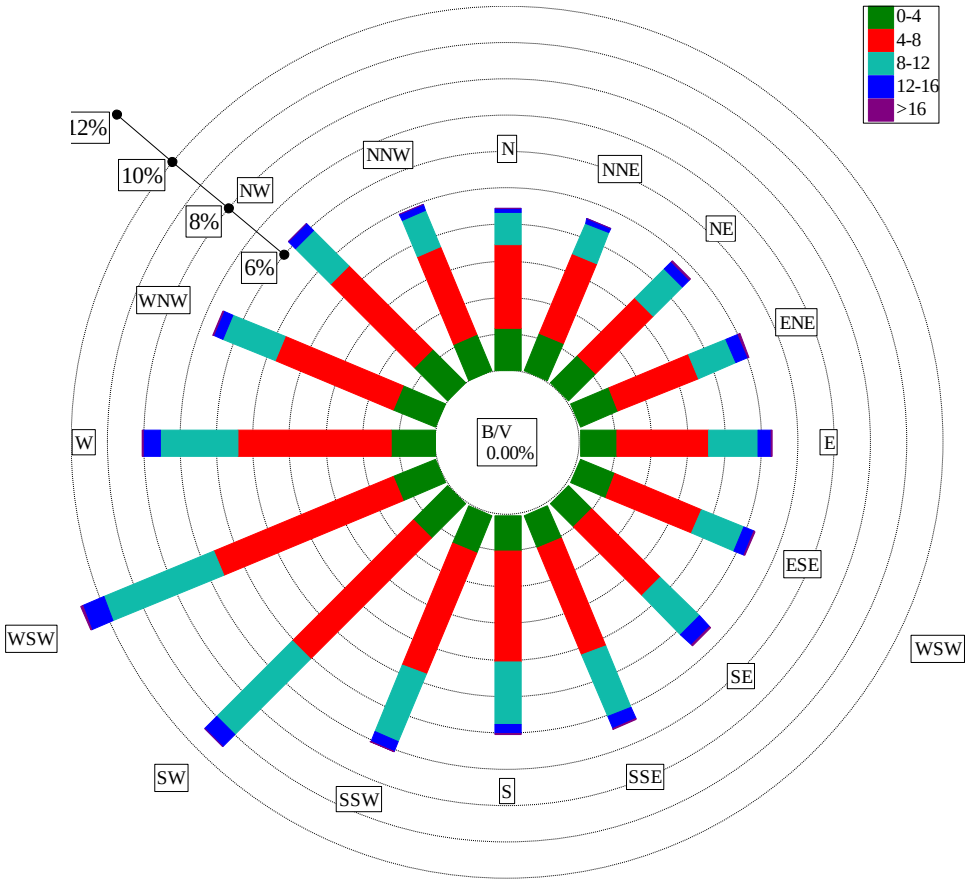
GoR South, 2021-2050



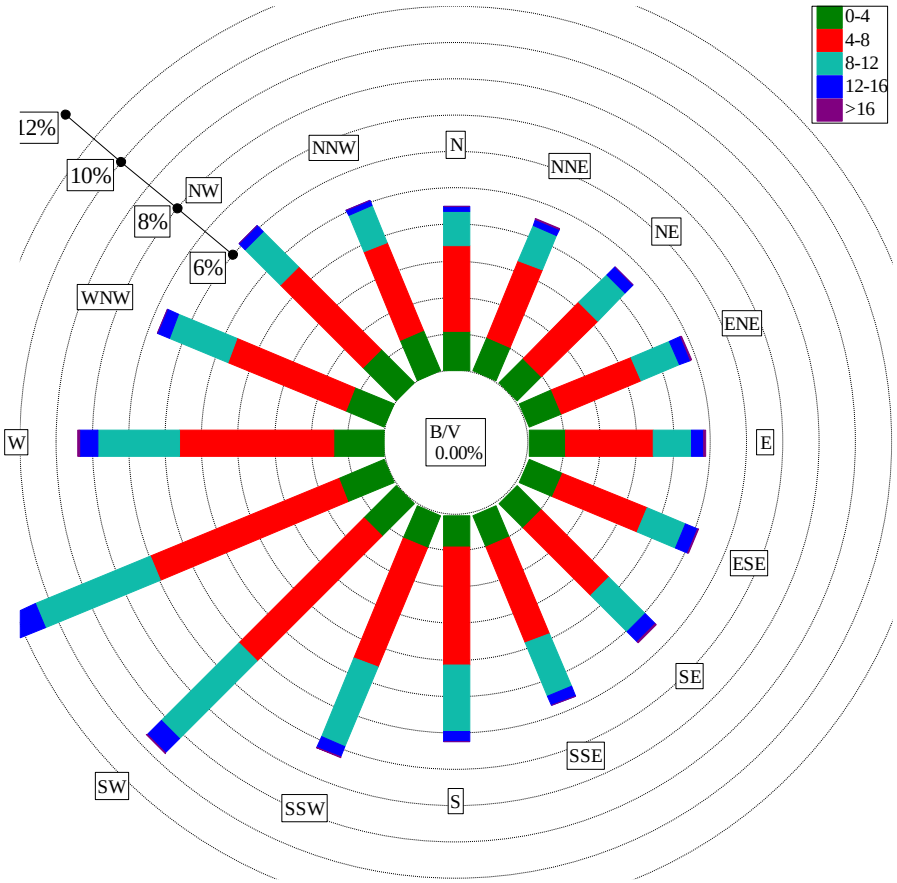
GoR NE, 1981-2010



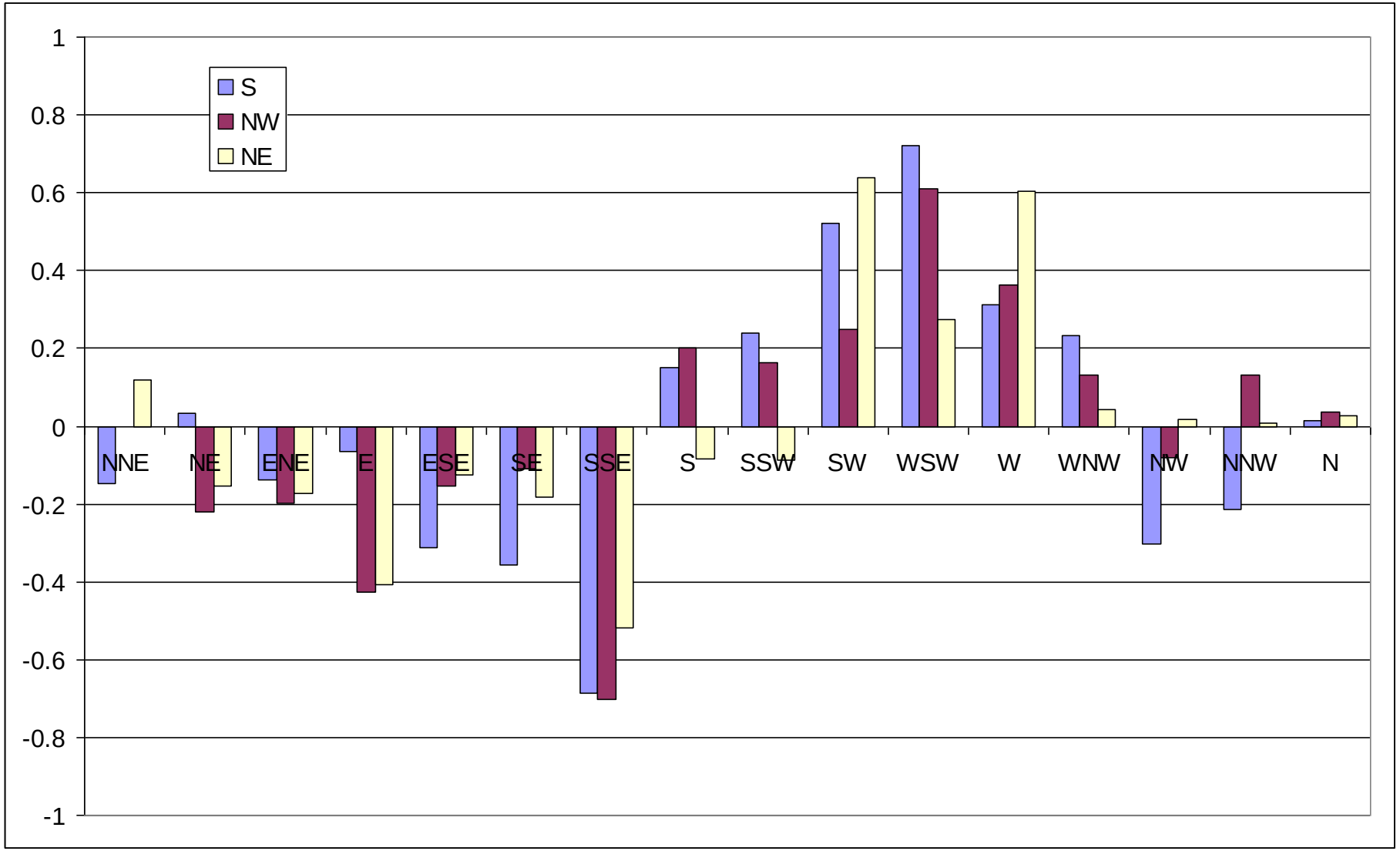
GoR NE, 2021-2050



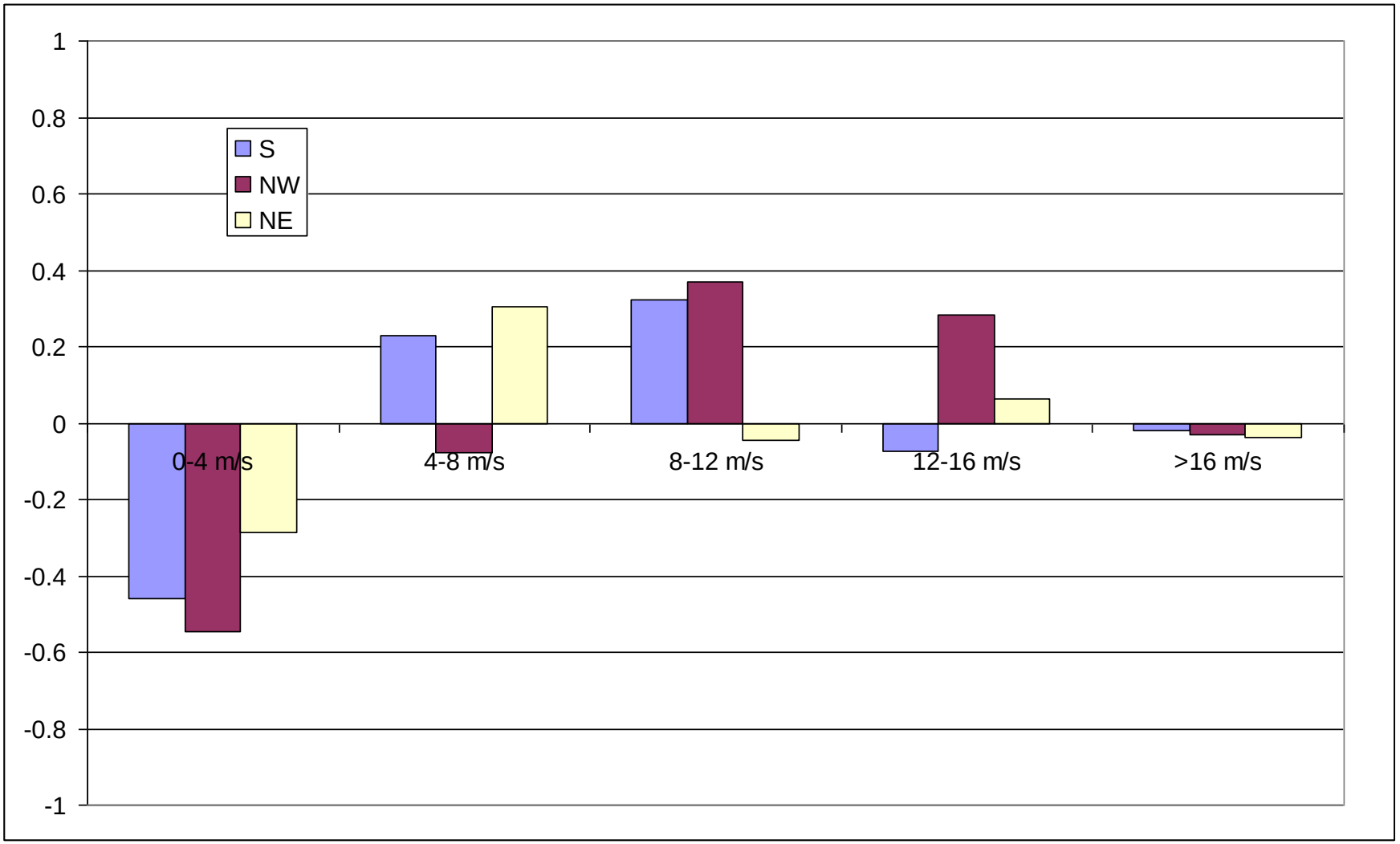
GoR NW, 1981-2010



GoR NW, 2021-2050



Change of occurance probability (%) between (2021-2050) and (1981-2010)



Change of occurance probability (%) between (2021-2050) and (1981-2010)