

The Compass Rose of the Mediterranean Sea and the Wind Name Rose of the Adriatic Sea : From the survey of Local terminology in the Adriatic coast

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The Compass Rose of the Mediterranean Sea and the Wind Name Rose of the Adriatic Sea

—From the survey of Local terminology in the Adriatic coast—

YANAI, Akio*

Abstract

In this paper, local terminology for wind is introduced based upon a survey of the Adriatic Sea conducted from April 2013 to February 2014.

Jugo and *Bura* are especially representative winds in this area, *Jugo* being a humid hot wind from the southeast and *Bura* being a dry cold wind from the northeast. While these winds are contrastive, they often replace one another in response to changes in the weather. As a result, there is a wealth of local terminologies which express the characteristics of the wind. These have been passed down as local wisdom and have also informed the people of local weather changes.

Up to this point we have obtained many local terminologies of the eastern coast of Korea and the coast of the Sea of Japan. Regarding the terminologies of the Adriatic Sea which we introduce in this paper, we obtained tendencies which were the same as the variation patterns until now.

1 Historical Wind Names and Main Directions

1-1. Historical direction names used by navigators in the Mediterranean Sea

The idea of aligning the direction of a wind with the four cardinal directions has a long history, stretching all the way back to Ancient Greece and Rome. In the Mediterranean area, winds blowing from particular directions were named after gods appearing in Greek myths. These gods symbolised the wind or the seasons and were generally called Anemoi. As the Anemoi myth spread through every region of the Mediterranean, several variants of their names came to be used and those corresponding to the four cardinal directions of east, west, south and north were further partitioned into eight and then twelve directions.

*Professor, Department of Environmental Science

In the 11th century, the compass rose assumed the role of indicating the cardinal directions on maps in addition to the Anemoi. It is said that the term “rose” came into use because of the association of the shape of the rose flower to the petal-shaped design of the tips pointing here and there on these graphs. The compass rose is therefore a combination of unique symbols and a scheme beautified by a decorative pattern.

Memorising the Anemoi that represented the characteristics of a wind blowing from a particular direction was equally important to Mediterranean sailors living in the Age of Sail and relying on the wind as was memorising the geographical features of a terrain or the position of islands, or knowing how to read a nautical chart. With the onset of the Age of Discovery, maps of the whole world began to be made in addition to maps of the Mediterranean Sea.

A number of noted cartographers left their mark on history in the 16th century. Among those most representative of that period was the Portuguese cartographer Diogo Homem. The wind names used by him have been noted down in Table 3-1.

After that, following the increased display of the four cardinal directions in the form of east, west, south and north due to the need for more accurate orientation, the Anemoi switched their role from just indicating direction to signifying the characteristics of the wind they originally represented.

Today, many nautical compasses employ a 360-degree scale to determine direction. They feature a twofold circular structure consisting of a scale circle with the geographic North Pole set to 0 degrees as the true north and 360 degrees rotating clock-wise, and another 360-degree scale circle with the magnetic pole set to 0 degrees inside it.

The wellknown compass rose of Diogo Homem (1570) is a thing belonging to the Mediterranean Sea. The history of wind names used in the Adriatic Sea can be found in Branka Penzar et al. (2001). From this can be seen how widely emulated was the nomenclature of Diogo Homem, even in the regions around the Adriatic Sea (Table 3-2).

A valuable reference point for those wishing to know about the standard nomenclature recently used in the Adriatic Sea region (the Dalmatian Coast) is Erald Marki (1950). According to him, N is represented by *tramuntana*, NE by *bura*, E by *levanat*, SE by *jugo*, *južina* or *jugovina*, *šilok* and *široko*, S by *jugo* or *oštro*, SW by *lebić*, W by *punent* and *pulenat*, NW by *maestral* or *mistral*, *meštral* and *smorac*. Furthermore, he adds the name of *garbin* and *odmorac* as a term for the WSW direction. He also states that the word *maestral* has its origins in the French word *maistre*¹, from which statement we can see that the names of directions used on the compass rose do not only change historically, but that they also change according to the cultural interaction between regions, and other geographical factors. It is conjectured that many of these terms are in use as standard names even in the present.

Table 3-1

| Direction Cartographer | N | NE | E | SE | S | SW | W | NW |
|---------------------------|-------------------|--------------|----------------|------------------|--------------|-----------------|----------------|----------------|
| Diogo Homem (1570) | <i>tramontana</i> | <i>greco</i> | <i>levante</i> | <i>schirocco</i> | <i>oštro</i> | <i>libeccio</i> | <i>ponente</i> | <i>maestro</i> |

Autor extracted the terminology from the chart-copy of the Mediterranean and the western coasts of Europe, the British Library. The historic map of the Mediterranean and western coasts of Europe was created in Venice in 1570 by Diogo Homem.

Table 3-2

| Direction Cartographer | N | NE | E | SE | S | SW | W | NW |
|---------------------------|-------------------|--------------|----------------|-----------------|--------------|-----------------------------|----------------|------------------------------|
| Kotruljević | <i>tramontana</i> | <i>greco</i> | <i>levante</i> | <i>scilocho</i> | <i>ostro</i> | <i>libeci garbino</i> | <i>ponente</i> | <i>maistro</i> |
| Đurašević | <i>tramontana</i> | <i>grego</i> | <i>levante</i> | <i>scirocco</i> | <i>ostro</i> | <i>garbino lebechio</i> | <i>ponente</i> | <i>maestro provenza</i> |
| Gučetić | <i>tramontana</i> | <i>grego</i> | <i>levante</i> | <i>scirocco</i> | <i>ostro</i> | <i>garbino</i> | <i>ponente</i> | <i>maestro</i> |
| Đurđević | <i>tramontana</i> | <i>grego</i> | <i>levante</i> | <i>scirocco</i> | <i>ostro</i> | <i>lebeccio garbino</i> | <i>ponente</i> | <i>maestro maestrale</i> |

B. Penzar, et al. (2001), P36.

Table 3-3

| | N | NE | E | SE | S | SW | W | NW |
|--------------------|-------------------|-------------|----------------|--|-----------------------|--------------|-----------------------------|--|
| E. Marki (1950) | <i>tramontana</i> | <i>bura</i> | <i>levante</i> | <i>jugo južina jugovina šilok široko</i> | <i>jugo ostro</i> | <i>lebić</i> | <i>pulent i pulenat</i> | <i>maestral mištral meštral smorac</i> |

1-2. Differences of wind names and these direction in the Istrian peninsula

According to the *Istarski Rječnik*² (*Istrian Dictionary*) online searchable dictionary hosted by linguists, historians etc., the linguistic characteristics found in the Istrian peninsula can be divided into 7 regions³. This online dictionary features the wind names and wind directions found in the following 5 of the 7 regions: Jugozapadna Istra (Southwest Istria), Labinština (the area around the town of Labin), Liburnija (Liburnia), Sjeverozapadna Istra (Northwest Istria) and Istromletački (Istro-Venetian dialect). We may consequently direct our attention to the following 8-directional terminological classification: *tramontane* as an N wind, *greco* / *bura* / *burin* as NE, *levante* as E, *scirocco* / *jugo* as SE, *oštro* as S, *libeccio* / *garbin* as SW, *ponente* / *pulenat* as W and *maestro* as a NW wind.

Table 3-4 has been created in order to show for which directions are wind names used in practice in the aforementioned 5 regions of the Istrian peninsula. In this table, the columns (vertical cells) distribute the names of the winds according to 8 directions. The names here

are those representative of each direction. The values in the table's rows (horizontal cells) represent the number of times a name has been used to signify a direction (the 8 directions from N to NW) in practice in each region. That is to say, for every wind name there is a numerical distribution showing in how many regions it stands for a certain direction. For example, if *tramontana* signifies N, then the value in the N column will be 1; if it stands for another direction such as NW or NE, those columns will also have the value of 1. If all 5 regions used the same name for the same direction, these values would be assembled into one column. However, variations in the names exist in each region (i.e. a different pronunciation of *tramontana* as *tramuntana* etc.). There are also cases where the expressions may slightly differ, but they still signify the same direction. Data concerning these cases has been added to the table as well. This is the reason why the values in the table are higher than 5.

As far as the characteristics of the standard wind names in the Istrian area go, it can be seen from this table that there is little ambiguity as to the directions of *tramontana*, *greco*, *scirocco*, *levante*, *oštro*, *ponente*, *libeccio* and *maestro*. On the other hand, the perceived directions of *bura*, *jugo* and *garbin* vary across the regions.

Table 3-4

| most common form and direction | | Actual usage in the region | | | | | | | |
|--------------------------------|----|----------------------------|----|---|----|---|----|---|----|
| | | N | NE | E | SE | S | SW | W | NW |
| <i>tramontana</i> | N | 8 | | | | | | | |
| <i>greco</i> | NE | | 2 | | | | | | |
| <i>bura - burin</i> | NE | 1 | 10 | 1 | | | | | |
| <i>levante</i> | E | | | 8 | | | | | |
| <i>scirocco</i> | SE | | | | 5 | | | | |
| <i>jugo</i> | SE | | | | 6 | 2 | | | |
| <i>oštro</i> | S | | | | | 3 | | | |
| <i>libeccio</i> | SW | | | | | | 4 | | |
| <i>garbin</i> | SW | | | | | | 6 | 1 | 1 |
| <i>ponente</i> | W | | | | | | | 3 | |
| <i>pulenat</i> | W | | | | | | | 4 | |
| <i>maestro</i> | NW | | | | | | | | 9 |

The winds *pluminsćak*, *furijoan*, *lostrin*, *bavisela* and *severin* have been excluded from this classification as non-applicable.

1-3. Current expressions on the Dalmatian coast

Many fishermen and people related to maritime activities in the Dalmatian region carry nautical ledgers with introductions to wind names. According to the tide forecast notebooks of R. Marini (2006), the *greco* which once stood for the NE was replaced by *bura* (table 3-5). The rest conforms to D. Homem's directions. In the notebooks of A. Božikov (2005), the southern wind *oštro* becomes *jugo* (Table 3-6). Many people in the fishing industry carry these kinds of notebooks. Consequently, this kind of information forms the basis of the general knowledge regarding winds for today's population of the Dalmatian region. However, according to M. Jurić (1972), *bura*, *burin* and *jugo* do not conform to one of these 8 directions, rather they make up a wide concept which spreads over several directions. Should we set out to comprehend local wind terminology, it is exceedingly important to understand that there is a certain width to their directions. This has also been highlighted for quick reference in Table 3-7 the same way.

As above, from this it is evident that names of wind directions have changed throughout history and that their forms vary in pronunciation and spelling across regions. The fact that the directions associated with them also vary across regions is noticeable as well.

Table 3-5

| | N | NE | E | SE | S | SW | W | NW |
|--|-------------------|-------------|---------------|---------------|--------------|--------------|----------------|-----------------|
| Today's general expressions used as wind names (1) | <i>tramontana</i> | <i>bura</i> | <i>levant</i> | <i>široko</i> | <i>oštro</i> | <i>lebić</i> | <i>ponente</i> | <i>maestral</i> |

Marini, R. *Predviđene morske mijene za sjeverni Jadran. Previsioni di marea nell'Adriatico settentrionale*. Zajednica tehničke kulture Pula, Pula 2006.

Table 3-6

| | N | NE | E | SE | S | SW | W | NW |
|--|-------------------|-------------|----------------|----------------------|---------------------|--------------|----------------|-----------------|
| Today's general expressions used as wind names (1) | <i>tramontana</i> | <i>bura</i> | <i>levanat</i> | <i>jugo - široko</i> | <i>jugo - oštro</i> | <i>lebić</i> | <i>pulenat</i> | <i>maestral</i> |

Ante Božikov, (2005) *Mare Nostrum. Jadranski godišnjak*. Abel, Split.

Table 3-7

| | N | NE | E | SE | S | SW | W | NW |
|---------------------|-------------------|--------------|----------------|----|--------------|------------------|-----------------|---------------|
| Žirjanin Mate Jurić | <i>tramontana</i> | <i>grego</i> | <i>levante</i> | | <i>oštar</i> | <i>garbinada</i> | <i>maestral</i> | <i>zmorac</i> |
| | <i>bura burin</i> | | <i>jugo</i> | | | | | |

Žirjanin Mate Jurić, (1972) *Vidikovac na Veloj Glavi, Vjetar*.

2 Local Wind Names from the Present Research

2-1. Local terminology regarding winds in the Adriatic coast

The results of our survey conducted in the year 2014 have been assembled in Table 3-8 in the same fashion as the already presented Table 3-3, as directions corresponding to the following representative wind names – *tramontana*, *bura* or *grego*, *levanat*, *jugo*, *oštro*, *lebić*, *pulenat* and *maestral*.

Our survey started with the following question: “Please provide us with the names of the winds blowing in this area and the directions from which they blow.” It is therefore considered that the respondents’ replies paid attention to actual local names of the winds, as opposed to the names on the compass rose used for navigation on nautical charts and maps.

From Table 3-8 it can be seen that specific local wind names do not correspond to the azimuths of the correct directions. We must therefore conclude that local wind names refer to an area wider than that of a specific direction.

The target of our survey are local winds which means that the spatial scale employed here is lesser than 10 km. Due to this, the directions of winds differ because of the influence of each region’s climatic peculiarities, terrain and artificial structures. In other words, it becomes apparent that the winds observed differ in each region, that their characteristics are incorporated into local terminology and used by the residents in a flexible manner.

Table 3-8

| most common form and direction | | Actual usage in the region | | | | | | | |
|-----------------------------------|----|----------------------------|----|----|----|----|----|----|----|
| | | N | NE | E | SE | S | SW | W | NW |
| <i>tramontana</i> | N | 20 | | | | | | | 10 |
| <i>grego</i> | | 1 | 1 | 1 | | | | | |
| <i>bura</i> | NE | 3 | 21 | 1 | | | | | 1 |
| <i>levanat</i> | E | | 3 | 24 | 1 | | | | |
| <i>jugo</i> | SE | | | 3 | 22 | 9 | 1 | | |
| <i>oštro</i> | S | | | | 1 | 10 | | | |
| <i>lebić</i> | SW | | | | 1 | 2 | 24 | | |
| <i>pulenat</i> | W | | | | | | 2 | 13 | 1 |
| <i>maestral</i> | NW | 1 | | | | | | 14 | 13 |

Data obtained by Yanai, 2013-14.

2-2. Naming Scheme of Local Terminologies

Local terminology and the phraseology derived from it covers a lot of ground, but certain patterns can still be perceived in the changes it goes through. These patterns refer to coinages created by adding an adjective to change a name, the selection of a word which expresses a bodily sensation, substitution with a simpler word, the incorporation of a geographical location into the name, allegory, humorous expressions, names expressing prediction or climatic change, and so on.

Naturally, local terminology corresponds to characteristic natural phenomena. The typical shape of these phenomena can easily be mutually recognised in local terminology. However, local terminology is insufficient in cases where the physically experienced natural phenomena stray from their usual patterns. For example, for calmer than usual occurrences, or occurrences having a greater effect than usual, as well as occurrences intertwined with other occurrences, greater ingenuity is necessary. To align local terminology with the diversity of natural phenomena, prefixes and suffixes, as well as adjectival phrases had to be added to basic local terminology.

By modifying local terminology to cope with various natural phenomena, people living alongside the Adriatic Coast share these phenomena amongst themselves.

(1) Main wind name in the Adriatic Sea coast

i) *Bura*

Bura is the most representative term belonging to local terminology in the Adriatic coastal regions.

NE has been defined as the most common wind direction for *bura* (in Pula and Labin on the Istrian peninsula, on the island of Mali Lošinj, in Rijeka, Selce, Jezera, and Betina, in Kali on the island of Ugljan, in Novigrad on the east of Zadar, in Šibenik, Split and so on)⁴. It is followed by N in Selce and ENE in Senj. Same as in Žirjanin M. Jurić (1972), *bura* is not understood as a wind blowing from a particular direction, rather there are people who perceive of it as a wind bearing certain characteristics and blowing in a wide range from the West through the North and all the way to the East (Crikvenica). This difference is the difference between seeing *bura* as the name of a wind on the compass rose, and seeing it as the phenomenon of a dry, cold wind blowing approximately from NE.

In the latter case, the perceived direction it blows from differs according to the topographical variations of each region. For example, the coastline in Opatija stretches from NE to SW, and so when *bura* blows from NE or ENE, it is perceived as a wind blowing from sea to land unlike in other places. However, in Muline on the island of Ugljan, the NE side is obstructed so it is said that *bura* circles in from the NW.

Nevertheless, the characteristics of the wind called *bura* are the same everywhere. Namely,

- ◆ *Bura* is a dry, low-temperature wind blowing down on the Adriatic Sea from the Dinaric Alps.
- ◆ *Bura* blows almost all year round.
- ◆ *Bura* is exceedingly cold in autumn, winter and spring.
- ◆ Strong *bura* is accompanied by a violent gale which changes in wind strength frequently during short periods.
- ◆ The *bura* that residents and fishing boats along the coast guard against the most brings along cloudy weather and rain.

Even in the world of local terminology, there are expressional variants for strong *bura* and weak *bura*. The most common expression for weak *bura* in local terminology is *burin* (Opatija, Crikvenica, Selce, Šibenik, Split). In addition to being the name for a weak *bura*, *burin* is also considered the harbinger of *bura* or *maestral* in some places (Crikvenica, Split). Other than that, weak *bura* is also called *burinac*.

ii) *Jugo*

In the Adriatic Sea, *jugo* is a damp, warm wind blowing along the coastline from the south or southeast. It is said to be frequent in autumn and spring, while also appearing in summer and winter. *Jugo* does not develop into a strikingly strong wind, but it blows for an extended amount of time, thereby causing great undulation on the sea. This characteristic perception of *jugo* is shared in all areas.

Many variants exist in local terminology to deal with the *jugo* events that is a temporal change of *jugo*. The name for weak *jugo* in local terminology is *južin*⁵ (Selce, Kali). However, there are subtle differences in the meaning of *južin* in each region. In Selce it points to a weak *jugo*, while also occasionally referring to when a wind blows as if it could be the harbinger of *jugo* as well. In the local terminology of Crikvenica on the other hand, *južin* does not signify the weak wind itself, rather meteorological conditions of high temperature and humidity levels, as well as an oppressive mood peculiar to *jugo*.

iii) *Lebić* and *Garbin*

Lebić and *garbin* are names for winds blowing from the SW.

According to our survey, *garbin* is used in 2 places, of which in Jezera there is no distinction between *lebić* and *garbin*. In Župa Dubrovačka, *lebić* seems to be precisely distinguished as an SW, and *garbin* as a WSW wind. In Lukoran, *garbin* is referred to as *grbin* and can be considered to be the same wind as *lebićada* (mentioned later on). Moreover, these winds are considered not to blow for a prolonged period of time.

Lebić is used in many regions (17 places), and approximately defined as an SW wind. However, its characteristics are multiple as follows.

Lebić is generally an SW wind (Šibenik).

Lebić is an SW wind but only at sea, it does not blow in Kali.

Lebić frequently occurs in spring or summer (Labin, Istra).

Lebić is an unsteady SW wind (Lukoran).

Lebić is an SW wind blowing from spring to summer, the strongest in July and August and in the afternoon. It is a weak wind blowing from sea towards land, diagnostic of stable weather conditions (Labin, Istra).

For sailors, *lebić* is a very bothersome wind as it can pick up speed very fast, and causes significant damage in coastal areas (Mokošica).

It is strongest in winter and autumn; it raises big waves and causes damage along the coastline (Konavle, Župa Dubrovačka, Split-Kaštela).

Lebić is known to begin blowing suddenly. It blows from land to sea and can be lethal to careless swimmers and small boats on the northwest side of the island of Cres. It develops into a strong wind resembling the *tramontana* and blows hard with big waves on the northern side of Cres (Opatija).

The *lebić* experienced from spring until summer is a comparatively calm SW wind blowing under stable weather. However, the *lebić* blowing in autumn and winter is characterised by sudden changes in speed and direction and considered to cause storms on the sea. Due to this, derivations signifying conditional changes for *lebić* exist in all areas.

There are areas where the strong form of *lebić* is called *lebićada* (Selce, Jezera etc.) and areas where *lebićada* refers to the weather brought about by *lebić* (Split etc.). In our survey, areas where weather and wind names are distinguished from each other (Selce, Jezera, Split) are numerous; for example, *lebićada* being the name for strong *lebić*, while the storm brought about by the rampant rain and strong wind caused by *lebić* bears the name of *nevera*. The distinction between wind, wind and rain, and storm is not clear on the other hand. We interpret this confusion as an indication of the holistic perception of phenomena employed in the local terminology of people in these regions. Furthermore, there are areas where the weak form of *nevera* is called *neverin* (Crikvenica, Selce, Privilaka).

There are several variants to *garbin*. There are areas where *garbinada* signifies a wind stronger than the SW *lebić* and has the same meaning as *lebićada* (Jezera), and areas where *garbinada* stands for the weather brought about by *lebićada* (Split). However, the distinction between *lebić* and *garbin* was not clearly delineated in this survey. One cause for that may be that *garbin* was historically also called *garbino* or *garbinada* which could have caused people to become confused and unable to provide stable definitions.

iv) *Maestral*

In many areas, *maestral* signifies the wind that blows from the sea (NW wind) during daytime in the summer. It is said it often ceases to blow after several hours in the day. After that there is a shift in wind direction and a change in the weather, for which there are many

variants in local terminology as well.

In each region, patterns of these changes can be found in the suffixes added to the word *maestral*. There are also many pronunciation variants such as *maestral*, *maeštral*, *maištral* and *meštral*, as well as similar words such as *meštra*, *maištra*, *meštroa*, *meštro* and so on.

The *maeštralun* in Split is a strong *maestral* said to start blowing early and cease late in the day.

The *maeštralada* in Novigrad is also called “*buri konj*” (*bura*’s horse) and is said to be a WNW wind blowing before *bura*. The summer wind *meštralada* in Kali is a pleasant NW wind which commences blowing in the morning and ceases in the afternoon. It is said to be a wind after which the sea becomes calm. A number of local residents appears not to distinguish between it and the *tramuntana*.

v) *Levant*

Levant is an old name for the direction of the East and can be seen on the medieval compass rose, while at the same time being the name for the eastern wind. *Levantara* is the same as *levant* and while their differentiation has not been clear (Privlaka), it was originally a term indicating a type of weather. There is room for further investigation and analysis of *levant*, *levantara* and the aforementioned *garbin* and *garbinada*.

vi) *Pulenat*

Polenat is an old name for the west in the form of *pulenat* and is also present on the medieval compass rose, while at the same time being the name for the western wind. *Plentada* signifies weather conditions brought about by *polenat*. In some regions the word is also used to signify the mood of that time (Split).

Polenat is a typical western summer wind. Nevertheless, it also blows in winter in the form of the SW *pulitada*, bringing along rain while not being very cold (Novigrad).

In the Kali region, *pulintačina* or *pulintada* is a W wind related to the blowing of *jugo*.

(2) Variations accompanied by adjectives relating to *Jugo* and *Bura*

i) *Bura*

The most common adjective phrase about *bura* is *Škura bura*. *Škura bura* is a strong *bura* blows in cloudy or rainy days ie bad weather. In general, *škura* means “dark” in English. The interpretation of *škura bura* is showed as follows in various places.

Škura bura (Opatija) : *Škura bura* is very dangerous *bura*.

Škura bura (Crikvenica) : *Škura bura* means dark *bura*, such *bura* is very strong.

Škura bura (Senj) : *Škura* means “dark”. At that time, the weather is cloudy with rain from the northeast.

- Šcura bura* (Jezerac) : Other expression are *ciklonalna bura* or *tamna*.
Tamna means “dark” in English.
- Scura bura* (Betina) : *Škura bura* means dark bura, such *bura* is very strong.
- Škura bura* (Ražanac) : *Škura bura* is the most vicious *bura*.
- Škura bura* (Šibenik) : *Škura bura* brings bad weather.
- Skura bura* (Split) : *Skura bura* means dark bura. *Skura bura* is very strong *bura* with cloudy and rainy weather.

Bura blows is relatively weak in the summer or in a sunny day, but *Škura bura* is extremely strong. Regional people using the phrase *Škura bura* have understood implicitly the dark sky/rainy and sea conditions like this. *Škura bura* is a violent gust. This gust blowing strongly, in the next moment, and weakened, and blow strongly again, so on. It is repeated in this way. Furthermore, *škura bura* is very dangerous, because it brings high wave with high steepness. People talk about the experience of *škura bura* seem to violent breathe. Such experience of *škura bura* are almost identical in many places.

People in Crikvenica judge the strength of *bura* by using the grade of adjectives. These grades are divided by four adjective phrases.

- Mala bura* : *Mala bura* is the weakest *bura*. Mali means “small” in English.
- Sredja bura* : *Sredja bura* is a *bura* of moderate speed. Sredja means “average” in English.
- Jaka bura* : *Jaka bura* is a strong *bura*. Jaka means “strong” in English.
- Orkanska bura* : *Orkanska bura* is the strongest *bura*. Orkanska means “of hurricane strength” in English.

The grade representation is a method that is similar to the Beaufort scale, ie wind scale. Beaufort scale is divided into 12 classes, however fine discrimination cannot be requested in the macroscopic observation of human beings. When people wish to determine the degree of wind strength, the grade of about five or less is appropriate.

M. Jurić (1972, op.cit.) shows that the direction of *bura* covers a wide domain; from ENE to N. People had used the word *bura* not only as an azimuth NE but also as characteristic of *bura*. Uncertain direction of *bura* was born as a result (refer to Table 3-7).

From our survey, the domain of the wind direction called *bura* is the wide in Kali (Ugljan Isle.) as follows.

Prava bura comes from the East direction from land. *Prava bura* means real *bura*. *Burji ujetrovi* comes from north to east, this winds in the manner of *bura* (Kali, Ugljan Isle.).

However, when the wind with the characteristic of *bura* blew and it blew from the original azimuth (NE) as an *bura*, they say, “true *bura* came”. We found expression called similar “true *bura*” in other place.

Furthermore, regardless of strength and a direction, there is an example of local terminologies that people are paying attention to a characteristic of the wind called *bura* through the year.

Čista bura (Privlaka) : *Čista bura* (Pure *bura*) is a north wind. Blows throughout the year.

In many cases, the wind that “*bura* is strong” and “*bura* causes damage” are the most common impressions for people. Therefore there are many phrases in order to express strong *bura* and the related phenomena.

Fortunal bure (Kali, in Ugljan Isle.) : *Fortunal bure* is the strongest *bura* and NE wind.

Fortuna bura (Šibenik) : *Fortuna bura* is an expression that *bura* caused by very strong wind blowing.

Bura often gives damage - particularly a strong wind, salt damage from sea spray and stable sea form - to farm products. In April and May if it throws salt into the fields plums didn't bear fruit. *Bura posojila* means “*bura* salted” in English. It's the worst in the winter time. In summer *bura* removes hot and humid weather moreover it brings dry weather and the sea temperature cools down.

An experience of the damage from salt breeze and the damage with the salt of the sea water caused by *bura* is expressed in such phrase. In addition, *špalment bura* (Novigrad) and *Bura dimi* (Kali, Ugljan Isle.) express the condition that a spray breaks out on the sea surface caused by *bura*.

At the condition of *špalment bura*, the people say “*došao je špalmenat*” in Croatian means “a *špalment* came”, when it carries the sea into the air (Novigrad). *Bura dimi* means “a *bura* smokes”. *Bura* creates smoke on the sea, the salt is like smoking. In Ošljak, the sea rises above the hill. The strong *bura* blows in particular twice a year in January and February from the experience.

According to Alica Bajić (2011)⁶, “Strong *bura* is frequent to March from December through the year. In particular, strong *bura* occurs in January and February”. After that, weak *bura* becomes to blow when spring has come. *Burin sipar* (Novigrad) expresses such circumstances.

On the other hand, *burin sipar* means “light winds in spring” (February, March, April: in many sites).

ii) *Jugo*

The origin of *jugo* is a hot air generated by the Sahara Desert in Africa. If *jugo* comes up to the Mediterranean, usually, terrible humidity and heat annoy people. When *jugo* blows along the coastline of the Dalmatian coast, its direction becomes southeast. The duration of *jugo* is relatively long, so *jugo* blows stable compared to *bura*. Therefore, the high waves like swells reach the coast. Moreover, *jugo* condition is often accompanied by a lot of rain in spring and autumn. For *jugo* with such a characteristic, there is a lot of local terminology with the adjective similar to *bura*.

Jugo in a sunny day brings the high waves. Concerning the people in the coast, it can not be off guard. As the expression to inform the risk of *jugo*, there is *vedro jugo* and others at many sites.

Vedro jugo refers to “clear *jugo*” that is generally more dangerous *jugo*. This is caused by *anticiklonalno jugo*, that is, the anticyclonic *jugo*. (Crikvenica, Šibenik, Jezera, Split and other).

In Split, *diže jugo* is used as the local terminology that expresses the same weather condition as *vedro jugo*. However, not only wind, *diže jugo* is an expression that include the condition of the sea. That is, *diže jugo* seems an expression that the wind and waves increase gradually caused by *jugo*. *Diže jugo* means a “south wind and waves become increase gradually” and “something goes up to *jugo*”.

There is adjective phrases regarding the real *jugo* in the same way as the *bura*, e.g. *pravo jugo* (Kali, Ugljan Isle.) and *čisto jugo* (Split).

Čisto jugo is called “real *jugo*” because *čisto jugo* is a due south wind.

In addition, the expression with the adjective on strong *jugo*, there are *fortunal juga*, *fortuna juga* and *olujno jugo* (Split).

In Kali of Ugljan Isle., *fortunal juga* is very strong *jugo*. In Ražanac and Šibenik, the people say “You can’t go out, big waves (it digs them out) come on a larger sea-space when *fortuna juga* happens”. In Zadar, *jugo* creates large waves but the gap between them is wide and the peaks are smooth which makes sailing much more pleasant. The exception to the rule is stormy *jugo* as *olujno jugo* when sailing is very dangerous. In many place, the people use *suho jugo* usually. *Suho jugo* is one kind of *jugo* which occur under the condition of clear weather. *Suvo jugo* is a dialect of Split and the synonym of *suho jugo*.

Jugo brings uncomfortable sensation by moisture and high temperatures to human. There is a phrase *gnjilo jugo* in words when people want to share this feeling.

Gnjilo jugo means rotten *jugo*. *Jugo* carries very hot temperature and very high humidity. *Jugo* blowing everything is easy to rotten. In this condition, people lose an active mind wherever ill people become too bad condition especially neurotic illness (in all over the Dalmatian coast).

Conclusion

By using the local terminology in their communities, people have avoided shipwreck at sea and local weather disasters.

We surveyed over 30 places on the coast of the Adriatic Sea and obtained a great deal of local terminology referring to weather and marine phenomena. These local terminologies were compared with the historical compass-rose and moreover these were classified into expression patterns by prefixes and suffixes which respond to changes in weather phenomena and maritime phenomena.

As a result, we found that several systems of knowledge exist in local terminology and that local terminology plays vital roles day to day. For example, the diverse local terminologies help predict the weather and help maintain the sensitivity to detect slight changes in weather. Furthermore, even outsiders not living within the local communities can be reap the benefits of the local terminology. We can experience virtually from their saying and their experiences of the transition of the phenomena, harbinger or convergence of events, because they can give a vivid description of the typical natural phenomena by using simple words or phrases.

We think that the system of local terminology is comparable to the science of historically accumulated experience, that is, the system of 'alternative science' is proposed by Yanai (2005).

In this paper we introduced part of the data relating mainly to wind from the data which we have obtained. Furthermore, the remaining data suggests that we can investigate the environmental outlook of people in coastal areas. Such philosophical themes will be discussed in the next paper.

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Notes

- 1 Maistre means "a master" in English.
- 2 *Istarski Rječnik*. Published by Nakladnik Histria Croatica – C. A. S. H. Pula, 2007.
<http://www.istarski-rjecnik.com/projekt/>
- 3 Južozapadna Istra, Labinština, Liburnija, Žminjština i Pazinština, Sjeverozapadna Istra, Bužeština i Ćićarija, Istromletački.
- 4 Parenthesis represents the survey site and hereinafter the same.
- 5 Linguistically, the correct form is *južina*, but *južin* is used as it seems to be the jargon of the corresponding area.
- 6 Alica Bajić, (2011) Spatial distribution of expected wind speed maxia in the complex terrain of Croatia as a basis for wind loads calculation, Doctral thesis, Univ. of Zagreb, P28. (Translated quote by autor).

日本語抄録

地中海のコンパスローズとアドリア海のウインドローズ —アドリア海沿岸の伝承的呼称調査から—

矢内秋生

概要

本論文では、2013年4月から2014年2月に行われたアドリア海沿岸の調査⁷をもとに、風の伝承的呼称 (Local terminology) が紹介される。同地域では、とくにユーゴ (*Jugo*) とブーラ (*Bura*) が代表的な風で、ユーゴは南東からの湿った熱風、ブーラは北東からの乾燥した寒風である。これらの風は対照的でありながら、天気の変化に応じてしばしば交替する。その結果、風の特徴を表現する豊富な伝統的呼称がある。これらは地域の知恵として伝えられ、また、局地的な現象変化を人びとに知らせてきた。

これまで筆者は韓国東岸と日本海沿岸での多くの伝承的呼称を得ているが、本論文で紹介するアドリア海における呼称についても。これまでの変化パターンと同様の傾向を得た。

7 本論文で紹介した内容は2013年度武蔵野大学大学教員海外留学制度によってZagreb大学地球物理学研究所客員研究員として派遣された際の研究活動の一部である。