

Interdependence of Chemical and Dynamical Conditions in the  
Area of the Otranto Strait

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S u m m a r y

Chemical conditions (salinity, pH, alkalinity, oxygen and nutrients) in relation to current dynamics in the area of the Otranto Strait, were investigated. The research was performed on two representative oceanographic stations by the R/V of the Yugoslav Navy "Andrija Mohorovičić" during its transadriatic cruises (II, III, IV). During the investigation period, two different marine chemistry aspects, much dependent on the dynamical ones, were established.

R é s u m é

Les recherches sur la distribution des conditions chimiques de la mer (la salinité, l'alcalinité, l'oxygène et les sels nutritives) par rapport à la dynamique des courants dans deux stations représentatives de la région du Canal d'Otranto ont été effectuées au cours des croisières transadriatiques (II, III, IV) du B/R de la Marine Yougoslave "Andrija Mohorovičić". Pendant ces recherches on a constaté deux aspects hétérogènes des conditions chimiques étroitement dépendante des systèmes de courants.

## I n t r o d u c t i o n

Chemical conditions of inland basins are, as known, very complex. Strong interaction of various environmental factors proceeded from atmosphere, land or sea contribute to those relations. The Otranto Strait is one of the most dynamic area in the central part of the Mediterranean, suitable to follow current dynamics between Adriatic and Ionian basin. We tried to focus our attention on its circulation mechanisms to explain changeable chemical conditions of the investigated area.

## M a t e r i a l a n d M e t h o d s

Investigations include seasonal work on two representative oceanographic stations situated on lateral parts of Otranto transversale profile. The first direct measuring of currents was applied on the area of Otranto Strait on different levels of water column by means of automatically recording current-meters set on moored buoys. Few types of current-meters were used. Direction and speed of currents were registered simultaneously every 5 or 6 minutes during 24 hours. Sea water sampling was carried out on standard oceanographic levels and samples were analysed immediately on vessel laboratory using methods given by Strickland and Parsons prevalently.

## R e s u l t s a n d D i s c u s s i o n

Collected data comprise few thousands dynamica and few hundreds chemical registrations and measurings. Comparing and discussing upon the data obtained, we can establish:

1. Two chemical different aspects, much dependent on seasonal dynamics.
2. Similar spring and winter dynamic trends are expressed by incoming current system on the eastern part of Otranto profil and outcoming on its western part. Distribution of chemical parameters during supranamed seasons are specific and significate and are in good agreement with registered dynamics.

3. Summer season, on other side, was characterized by a prevalently stationary dynamical state and a low exchange of water between two neighboring basins. In connection with that a uniform distribution of chemical parameters appears across of the water column.

#### REFERENCES

1. Škrivanić (A.), Vučak (Z.), and Nožina (I.), 1977. A new aspects of marine chemistry in relation to dynamics of the Adriatic Sea. Rapp. Proc. Verb. Reun. CIESM. 24 (8) 85-87.
2. Vučak (Z.), 1977. Measuring of currents in the area of the Otrant Strait (in Croat.), University of Zagreb, Centre for marine graduate study.

#### DISCUSSION

Questions and comments:

1. Did you measure soluble silica or total silica?  
Do you know the surface area of solid silica suspended in sea water? It would be important to measure it by coulter counter method, to calculate the adsorption of trace metals on silica surface. It shows very strong adsorbability with respect to lead, zinc and copper.  
(H. BILINSKI, Yugoslavia).
- We measure in sea water only soluble and reactive silica forms by Mullin-Riley spectrofotometric method with some modification carried out by Stryckland. As known, this method depends upon the production of the silicomolybdate complex of silica forms present in solution but does not comprise solid silica suspended in sea water.  
I personally accept and agree with your suggestion on importance and necessity of measuring also suspended silica in sea water.

2. Have the parameters such as the concentrations of heavy metals and chlorinated hydrocarbons been measured also in addition to the data you have presented? (R. FUKAI, Monaco)
  - Yes, I know that my colleagues measured the concentrations of heavy metals.
  
3. The relatively high values for silicates and nitrates in deep waters of Otranto Strait you have found that depend on volcanic activities. Have you some hypothesis about origin and mechanisms of incorporation of their compounds? (A. BALLESTER, Spain).
  - Our hypothesis is that the origin of high concentration of nitrates could be connected with bottom seasonal dynamics in the Jonian basin as well as influenced by deep Mediterranean circulation.