



Diatom from Majerda river and Tunis lagoon, Northern Tunisia

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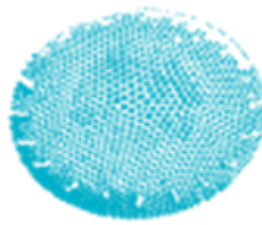
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DIATOM FROM MAJERDA RIVER AND TUNIS LAGOON, NORTHERN TUNISIA



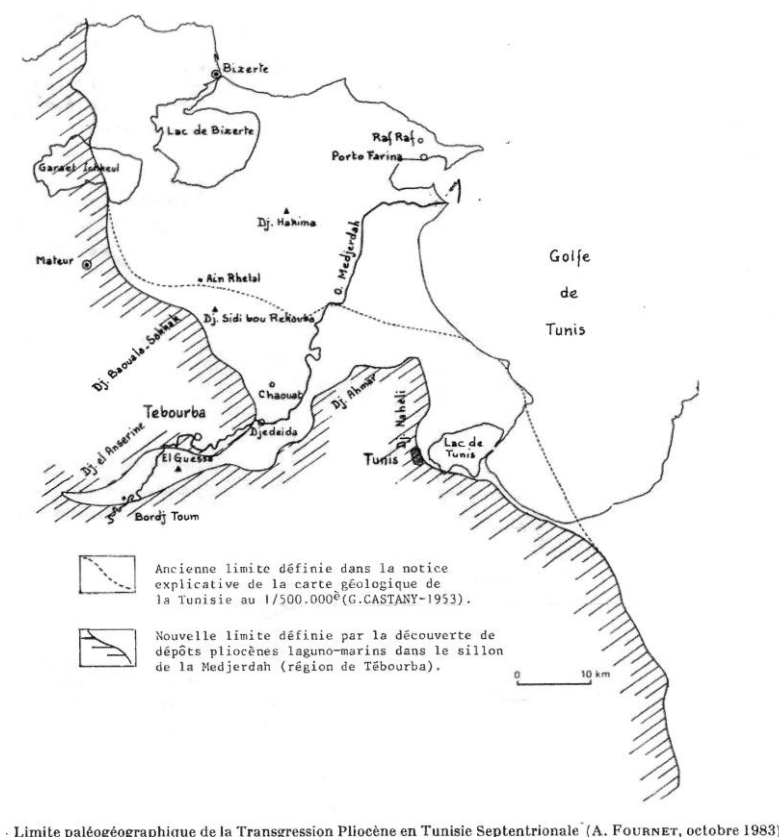
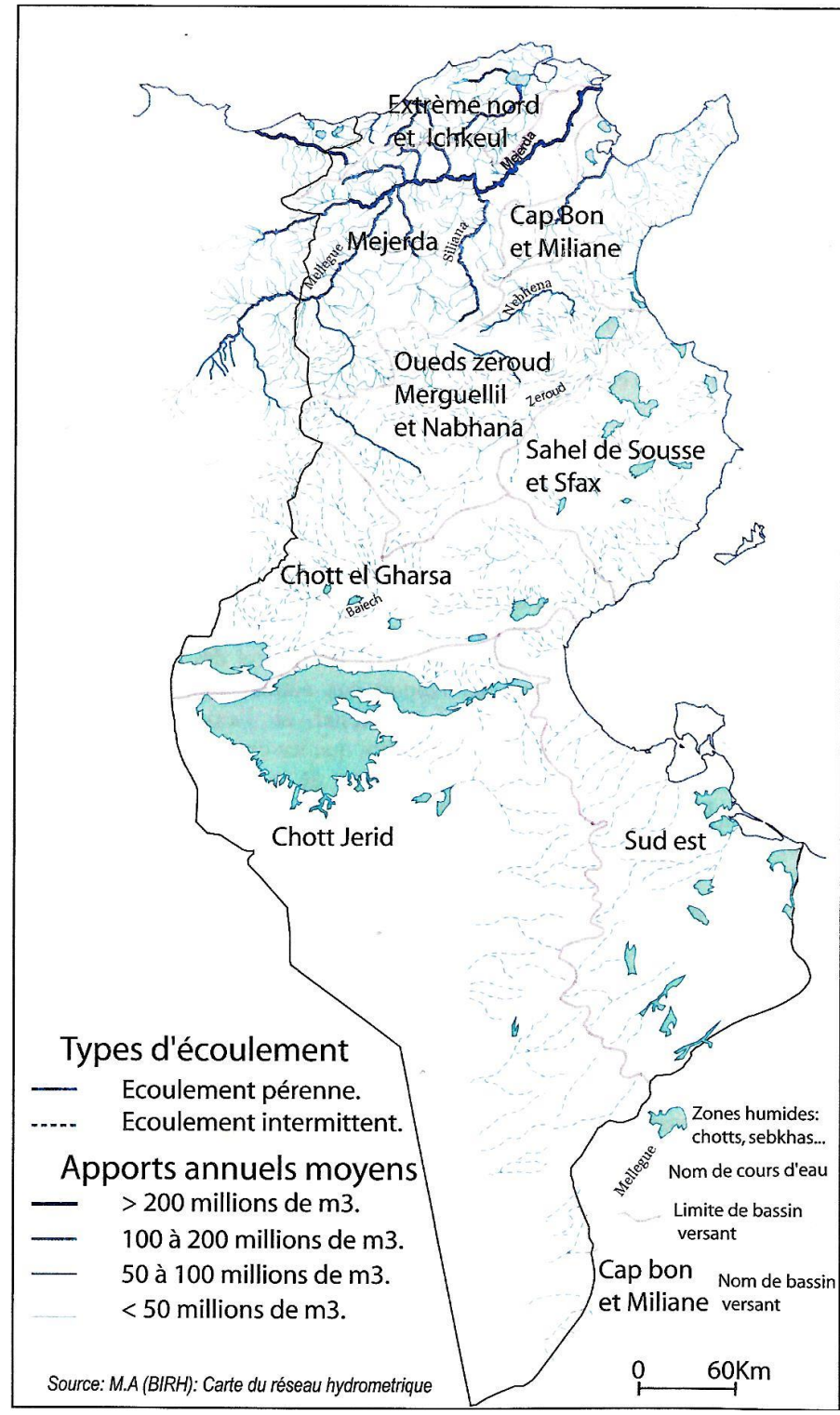
CENTRAL EUROPEAN
DIATOM MEETING

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AIM OF THE STUDY

1. Using Diatom, Cyanophyceae and other micro flora and fauna to contribute to explain the diminution of the stock of Alevins of *Mugil Cephalus*, *Liza Ramada* and Carp (Mili S. et al., 2016) in the aquaculture Basin of the Majerda River.
2. To distinguish taxa linking with eutrophic polluted area by anthropic effect, and thus to contribute to water management of Majerda River which provides the drinking water for all the big cities of Tunisia; Tunis, Cap-Bon, Sahel et Sfax and the water for the principal agricultural area as Grombalia, Soliman, Cap-Bon, Mornag, Ras Jebel, Ousja and Kalaat El Andalous.
3. To contribute in the study of recent sedimentation in the Gulf of Tunis to prevent urbanisation effect and to understand the paleoenvironmental and paleoclimatical change during the quaternary alternance of glacial-interglacial input from the Majerda river.
4. A modern analogue for the *Cyclotella* spp. earlier referred as *Cyclotella caspia* in fossil african assemblages ' yet it is absent from the modern flora of this region (in Carvalho, L.R. et al., 1995)', is observed. A MEB identification on the frequent small specimens of *Cyclotella* sp. *ocellata* Pant. would give a taxonomic answer.
5. Two rare *Nitzschia* specie, one marine and one continental are of interest, if similitude in between, we might have an information about eustatic event in that area which would have affected the whole region of the SW Mediterranean Sea.



Pliocene Marine deposit in the Majerda in Tébouba Region

AREA OF STUDY



Alevin of Mullet



Sampling Epipellic diatom



Sampling Diatom from Running waters



Polluted area



Pumping-Station



Kalaât El Andalous, a construction area

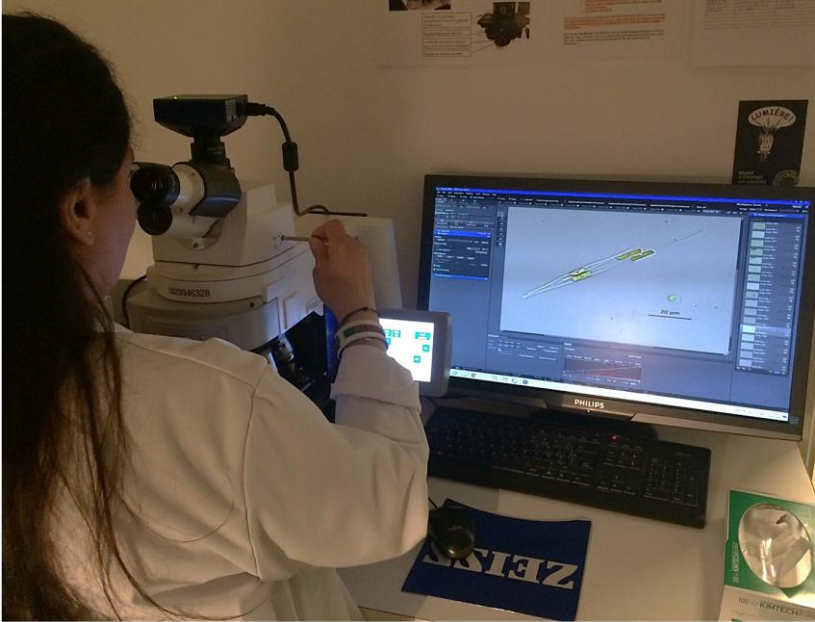


Bay of Tunis



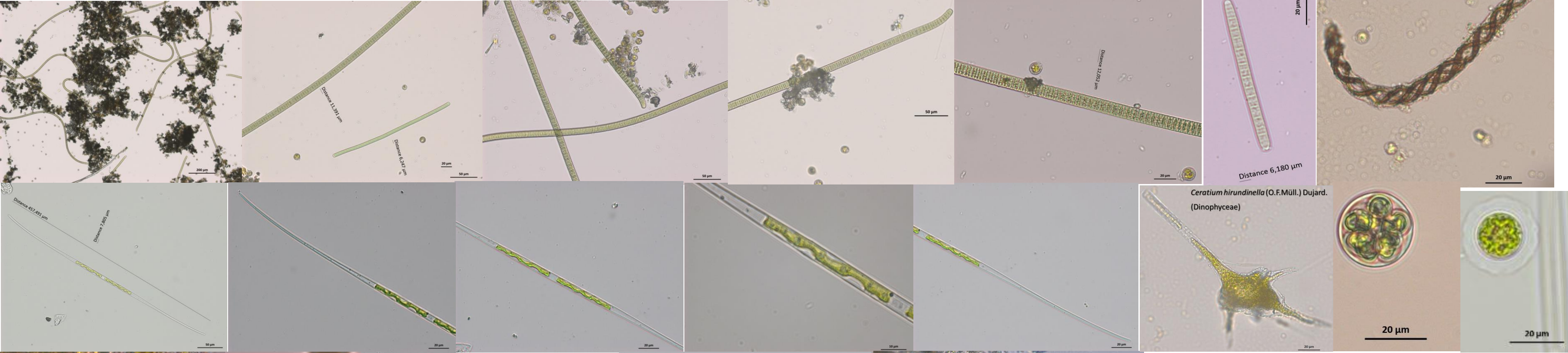
Tunis lagoon with marine modern diatom

METHODOLOGY AND PRELIMINARY RESULTS



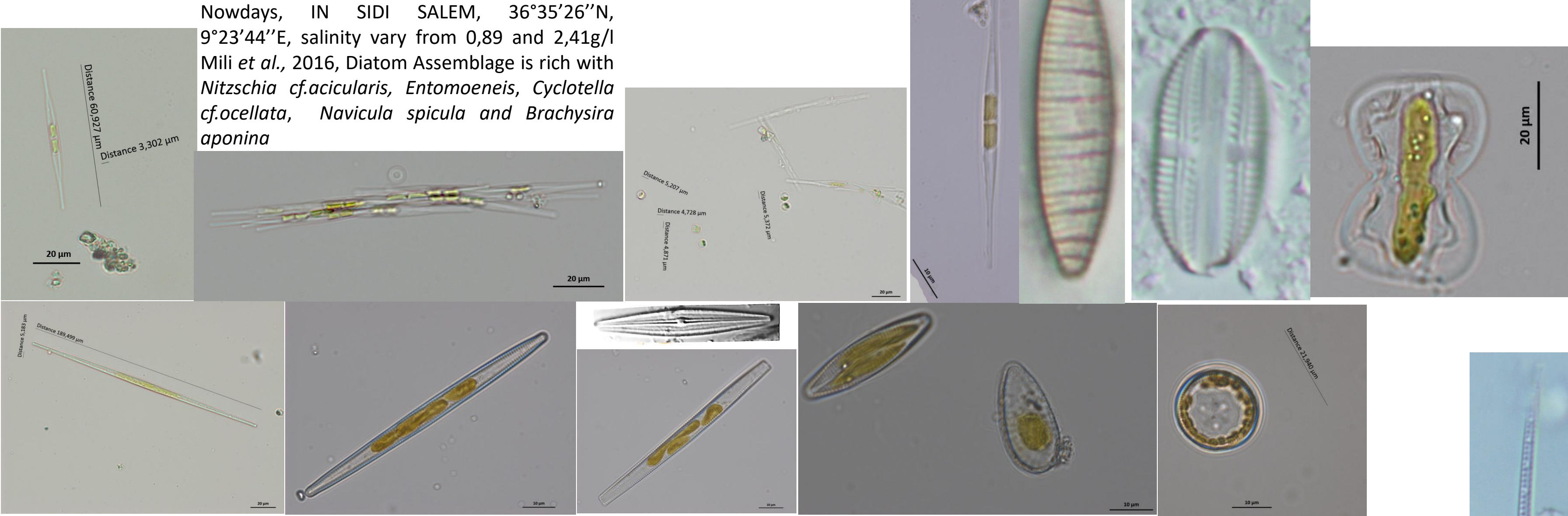
1. *Cyanobacteria* (trichome) and microalgae were isolated using a tapered pipette and observed with a ZEISS LM (S.Hamlaoui). In Majerda River we have observed *Phormidium* sp. and *Planktothrix* sp. (Cyanophyceae), (Cyanophyceae), *Vaucheria* sp. (Xanthophyceae), *Ceratium hirundinella* (O.F.Müller) Dujardin (Dinophyceae), *Closterium aciculare* T. West (Zygnematophyceae). Some species of *Phormidium* and *Planktothrix* might be toxic (Hamlaoui, perso.comm.). Toxicity tests must be conducted to affirm that the decrease in the stock of Alevins of *Mugil Cephalus*, *Liza Ramada* and Carp (Mili S. et al., 2016), in the aquaculture Basin of the Majerda River, is due to the proliferation of these cyanobacteria. Thirty three years ago, in Majerda River, Diatom assemblage was rich with *Cyclotella* sp. *ocellata* Pant, probably corresponding to *Cyclotella choctawatcheana* Prasad, (in Carvalho et al., 1995), in all the major ten sites of the river. In 2019, it is less distributed and often replaced by *Nitzschia acicularis* (Kütz.) W.Smith which suggest an eutrophic freshwater habitat cf. L.Bertalot et al., 2017. In particular, in the four sites of Kalaât El Andalous, it is absent where eutrophic taxa, in particular *Thalassiosira* aff. *Weisslogii*, *Gyrosigma* and *Halamphora* are abundant in several sites and mostly near the Kalaât El Andalous 'station de Pompage' and the bay of Tunis.
2. In Tunis Lake 36°49'03 "N, 10°14'33"E, around 40 marine species are observed (Ben Khelifa, L.,1989) and more than ten species from the Majerda River are observed with in particular, *Gyrosigma*, *Coconeis placentula* and *Halamphora* species. Subsurface sediment of two cores (in North lake), show a rapid diagenese of diatom frustules because of the high eutrophication, however other micro-organismes are observed. Some Desmidiaceae type *Pleurotaenium* Nageli (Hamlaoui, perso.comm.), suggest hot humid period in the Holocene recent whereas, one enigmatic specie observed may be nowadays near the edge of the Majerda River, suggest an aridification events and /or eustatic change within the quaternary section.

MICROALGAE FROM MAJERDA RIVER

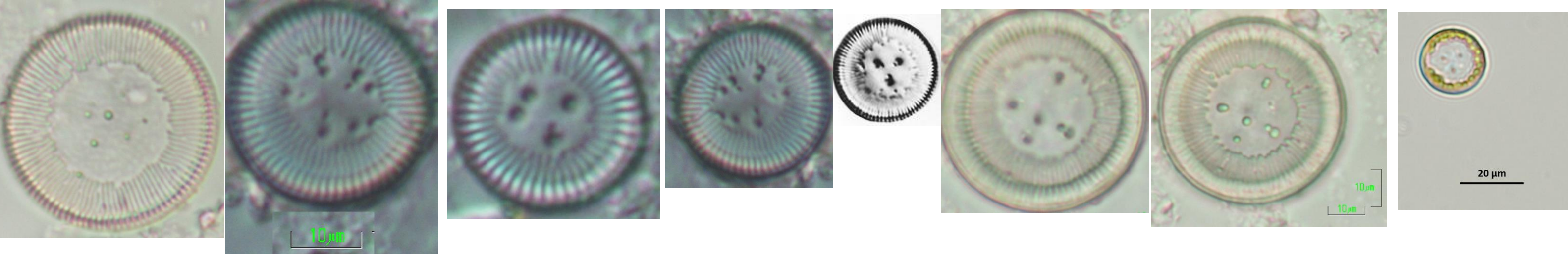


Eutrophic microalga and microfauna are observed either in Kalaat El Andalous sites near the bay and in Tunis lagoon

DIATOM FROM MAJERDA RIVER, pH = 8 to 8,5 (Ben Khelifa, 1989)



Cyclotella spp. cf. ocellata Pant



In 1984 and 1986, in all sites of the Majerda River, *Cyclotella* sp. *ocellata* Pant. was often abundant and in diverse size and spread in different part of the river but never rich the Tunis lagoon. Today, in 2019, this specie is less abundant, and seems more homogene in size and is observed frequently only in Sidi Salem site. In sites from Kalaât el Andalous, this taxa is absent.

Nowdays, in all the other sites of Kalaât El Andalous, near the bay, Eutrophication is important and *Cyclotella* sp *ocellata* is replaced by *Thalassiosira* abundant with *Gyrosigma*, *Entomoeneis* and *Navicula*. They are observed even in the Tunis lagoon. *Nitzschia* species are present but not the *Nitzschia acicularis* observed in Sidi Salem



Nitzschia spp. :
In Majerda River, this specie occur in different shape and size but has always same fibulæ and a translucent body



Nitzschia sp (around L=280µm, B=8 to 40µm in Majerda River has a similitude with the marine specie *Nitzschia aff. longissima* (Bréb.) Grun., observed in modern Tunis Lake but has lost its elongate apices

THANKS TO

