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Palynology and climate changes: from Tardiglacial to today

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The interest for past climate changes challenges students to reconstruct paleoclimatic geological successions of late Quarternary. The Tardiglacial, which preludes to Holocene, seems to be a critical period to understand the climatic evolution; in particular the Younger Dryas represents the last cold climate variation before pre-Boreal time.
The central-Adriatic area offers very rich Tardiglacial and Holocenic evidences: biostratigraphic analysis of sea cores extracted in the Adriatic basin reveals a series of steps and floristic-vegetation changes dating back to the last glacial-interglacial cycle, from which it was possible to acquire information about paleoenvironmental variability of the last 10,000 years.
In particular palynology, that allows space-time recording of the plant landscape in the investigated area, and paleopalynology are used for precise biostratigraphic analysis.
Our current research activity, started years ago at the University of Modena, takes place in parallel to every day teaching and provides for participation of a group of motivated and interested students. It consists in the comparison between the palynomorphs personally analyzed and identified in the sea core RF95-14, extracted in central Adriatic from the Institute of Marine Geology of CNR (National Research Center) in Bologna and dated back to Younger Dryas, and those ones belonging to actual vegetable cover in the same area, typically Mediterranean.
The climatic Younger Dryas temperature oscillations, starting from a cold-wet phase to a milder one, allows to identify a gradual change in the landscape: from Glacial steppe vegetation (Artemisia and Chenopodiaceae), through a period of open Graminaceae grasslands, until oak forests and generally Early Holocene deciduous.
The current Earth zonation fully integrates the examined area in the temperate-boreal belt, where prevails the typical Mediterranean biome with deciduous trees – birch, beech, maple, oak-. Therefore it becomes interesting to compare climatic conditions that are very distant from each other, through the analysis of a climatic evolution started 12,000 years ago: a parallel is made between plant biomorphs that characterize the same geographical area in geologically distant times.
This research allows us to develop the important chapter of palynology. The bio and morphometric analysis of pollen grains for paleontological purposes requires great critical and observation skills, as well as a thorough knowledge of the pollen families and their identification structures. In parallel an important work of study and classification of general pollen types is carried out, by the elaboration of a glossary of specific terms and a sort of procedural protocol to classify and identify the pollens recognized in the samples.