Sedimentary and diagenetic features of the Oolithe Blanche formation (Middle Jurassic): New contribution from Ca, Sr, C, O isotopic compositions

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The Oolithe Blanche formation is present in the Paris Basin at more than 1500 m depth in the middle of the basin and on outcrops at the basin edges. This Bathonian formation (Middle Jurassic) is composed of very shallow marine oolithic and bioclastic limestones, located within a shoreface depositional environmental (Casteleyn *et al*., 2010).

Calcium, strontium, carbon and oxygen isotopes have been analysed both in ooids and interparticular cement directly extracted from the limestone in order to study sedimentary and diagenetic environment.

The $^{44}Ca/^{40}Ca$ ratios (expressed as $\delta^{44/40}Ca_{SW}$) were measured by TIMS using a ^{42}Ca-^{48}Ca double-spike. Carbon and oxygen isotopic ratios were measured by IRMS.

Preliminary results show a range of $\delta^{44/40}Ca_{SW}$ from -0.74‰ to -1.09‰ in the cement and from -0.85‰ to -1.05‰ in ooids. Carbon isotopic signature show a range of $\delta^{13}C$vs PDB range from 1.5‰ to 2.7‰ in the cement and from 1.5‰ to 2.4‰ in ooids while $\delta^{18}O$vs SMOW vary from 21.5‰ to 23.9‰ in the cement and from 21.2‰ to 24.9‰ in ooids.

This first multi-isotopic approach on Oolithe Blanche formation seems to be consistent with the diagenetic evolution of Paris Basin. Effects of diagenesis on the isotopic signatures will be discussed.

Casteleyn, L., Robion, P., Collin, P.Y., Menendez, B., David, C., Desaubliaux, G., Fernandes, N., Dreux, R., Badiner, G., Brosse, E., Rigollet, C., 2010. Sedimentary Geology 230, 123–138.

Role of small urban reservoirs in regulating watershed quality

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Many coastal creeks in California drain small upstream reservoirs. These reservoirs were originally created to store drinking water, but many are currently maintained for recreation, irrigation, and other purposes. More than 200 of these reservoirs are located within the San Francisco Bay (SFB) area, which is western North America's second largest urban area. As a result, these small individual reservoir/creek systems contribute a significant proportion of pollution to the coastal ocean. Understanding modern and historic biogeochemical cycling in urban watershed/reservoirs systems provides new insight into anthropogenic influences on the function of these systems, how differing management strategies in these systems may mitigate or exacerbate contaminant discharge to the urban-influenced coastal ocean, and how best to manage these systems for improved water quality and beneficial use in the future.

The present study investigates three watershed/reservoir systesms in the east SFB region to better understand biogeochemical cycling in disturbed urban environments. For example, Lion Creek/Lake Aliso is an acid mine drainage impacted system and the Don Castro/San Lorenzo Creek system is influenced by freeways and residental land uses. In comparison, the relatively undeveloped Lake Anza/Wildcat creek is primarily surrounded by parkland. Water quality data (including standard geochemistry, as well as nutrient and trace element concentrations) from reservoir inlets and outlets at each of these systems is collected biweekly. Depth profiles of pH, conductivity, temperature, and dissolved oxygen within each lake are also collected biweekly. In addition, sediment cores from multiple locations in each lake were collected and analyzed for nutrient and trace element concentrations.

Preliminary results indicated urban reservoirs play an important role in biogeochemical cycling in urban watershed and downstream water quality. Lake water column structure varies over the course of a year with reducing conditions prevailing during warm summer months and more oxidizing conditions occuring during more winter months. The oxygenation state of these lakes ultimately plays a significant role in whether metals and nutrients are mobilized or retained. In addition, sediment cores from each of the lakes indicate changes in how these lakes cycle elements has changed through time in response to differing managing strategies.

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