

# Accepted Manuscript

Research papers

Identifying geochemical processes using End Member Mixing Analysis to decouple chemical components for mixing ratio calculations

Flavia Pelizardi, Sergio A. Bea, Jesús Carrera, Luis Vives

PII: S0022-1694(17)30231-7

DOI: <http://dx.doi.org/10.1016/j.jhydrol.2017.04.010>

Reference: HYDROL 21941

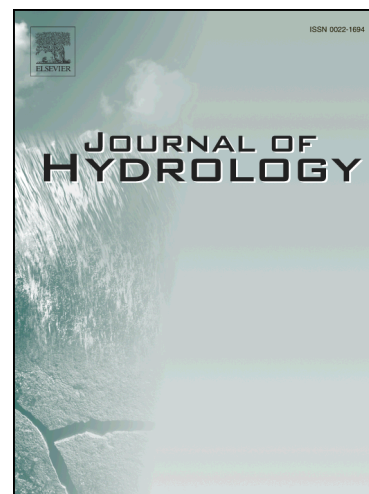
To appear in: *Journal of Hydrology*

Received Date: 22 January 2017

Accepted Date: 3 April 2017

Please cite this article as: Pelizardi, F., Bea, S.A., Carrera, J., Vives, L., Identifying geochemical processes using End Member Mixing Analysis to decouple chemical components for mixing ratio calculations, *Journal of Hydrology* (2017), doi: <http://dx.doi.org/10.1016/j.jhydrol.2017.04.010>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



## Identifying geochemical processes using End Member Mixing Analysis to decouple chemical components for mixing ratio calculations

Flavia Pelizardi<sup>1</sup>, Sergio A. Bea<sup>1,2</sup>, Jesús Carrera<sup>3</sup>, Luis Vives<sup>1</sup>

<sup>1</sup> Instituto de Hidrología de Llanuras “Dr. Eduardo J. Usunoff”. Av. República de Italia 780 – 7300 Azul, Buenos Aires - Argentina - +54 2281 432666 - [pelizardi@faa.unicen.edu.ar](mailto:pelizardi@faa.unicen.edu.ar)

<sup>2</sup> CONICET, Av. Rivadavia 1917 - C1033AAJ Ciudad Autónoma de Buenos Aires - Argentina

<sup>3</sup> GHS UPC-CSIC, Instituto de diagnóstico Ambiental y Estudios del Agua (IDAEA), CSIC, Jordi Girona 18-26, 08034 Barcelona, España

### ABSTRACT

Mixing calculations (i.e., the calculation of the proportions in which end-members are mixed in a sample) are essential for hydrological research and water management.

However, they typically require the use of conservative species, a condition that may be difficult to meet due to chemical reactions. Mixing calculation also require identifying end-member waters, which is usually achieved through End Member Mixing Analysis (EMMA).

We present a methodology to help in the identification of both end-members and such reactions, so as to improve mixing ratio calculations. The proposed approach consists of:

(1) identifying the potential chemical reactions using EMMA; (2) defining decoupled conservative chemical components consistent with those reactions; (3) repeat EMMA with the decoupled (i.e., conservative) components, so as to identify end-members waters; and (4) computing mixing ratios using the new set of components and end-members. The approach is illustrated by application to two synthetic mixing examples involving mineral dissolution and cation exchange reactions. Results confirm that the methodology can be successfully used to identify geochemical processes affecting the mixtures, thus improving the accuracy of mixing ratios calculations and relaxing the need for conservative species.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات