

## Chapter 2

# The Main Types of Groundwater Base-Level

There are basically two main types of groundwater base-levels, namely the marine ones and the continental ones.

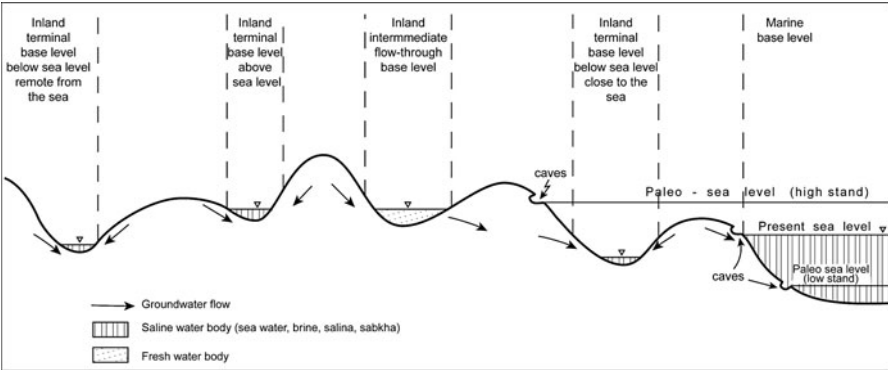
The marine base-levels include the oceans and their connected seas and in places coastal sabkhas. They serve as terminal base-level to groundwater flow, as well as to surface flow from the continents. Being interconnected, and different from continental base-level, they have roughly the same level which is the global sea level. Climate changes, in the past, have affected globally the sea levels.

Continental base-levels are geographically defined and described from all over the world. They consist of terminal, termed endorheic, closed systems that are not interconnected in most cases. They differ, regarding their dimensions, between large, regional, base-levels and smaller local ones. Regarding their elevation, some of them are above sea level, whereas some are below sea level and even considerably below it. The latter category includes two types, that assumingly have a different relevance regarding salination processes, namely those base-levels that are distant from (Chap. 10) or those close to, and possibly connected to the sea (Chap. 11).

Local continental base-levels are also formed naturally where local sabkhas or areas that occupy phreatophytes, occur as discharge zones, resulting in convergent groundwater flow toward them and a water table sink due to high evapotranspiration (Sect. 3.6). Local man-made hydrological sinks are also formed through groundwater dewatering or over-exploitation or hydrocarbon abstraction (Sect. 3.7).

A special category are the flow-through intermediate base-levels that are not terminal or endorheic by definition. These base-levels attract convergent groundwater flow but they still drain constantly or temporarily by surface and/or subsurface flows down stream to a down gradient marine base-level or to a terminal continental one.

The above listed base-level types, as schematically shown on Fig. 2.1, occur at present and occurred also in the past as different paleo-base-level types.



**Fig. 2.1** Schematic description of main base level types

The different base-level types are analyzed further in this book, accompanied by detailed, as available, description of examples from all over the world (see also Chaps. 7–9).

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Kafri, U.; Yechieli, Y.

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