



# Lithospheric buckling dominates the Cenozoic subsidence of the Qaidam Basin, NE Tibetan Plateau

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## Introduction

The Qaidam Basin is the largest sedimentary basin within the Tibetan Plateau, and the subsidence mechanism in the Cenozoic remains controversial.

Objectives:

- Investigating the evolution of the Cenozoic Qaidam Basin (NE Tibetan Plateau) from flexural modeling and subsidence analysis.
- Revealing lithospheric buckling dominates the Cenozoic subsidence of the Qaidam Basin.

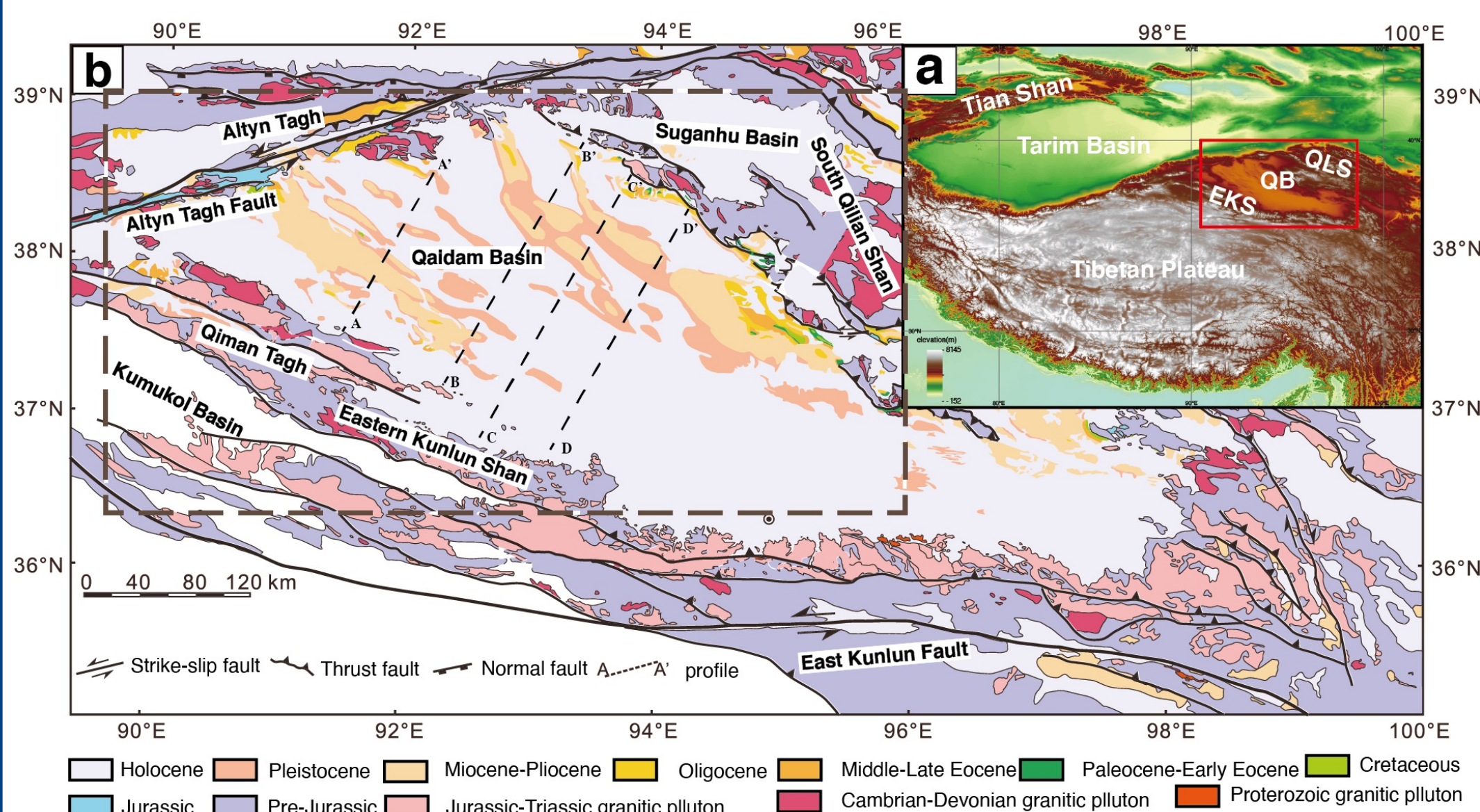


Figure 1. (a) sketch map of the Tibetan plateau. EKS, eastern Kunlun Shan; QB, Qaidam Basin; QLS, Qilian Shan. (b) Geological map of the Qaidam basin and NE-SW oriented seismic profile in the Qaidam basin, modified from Cheng et al. (2019).

## Isopach maps

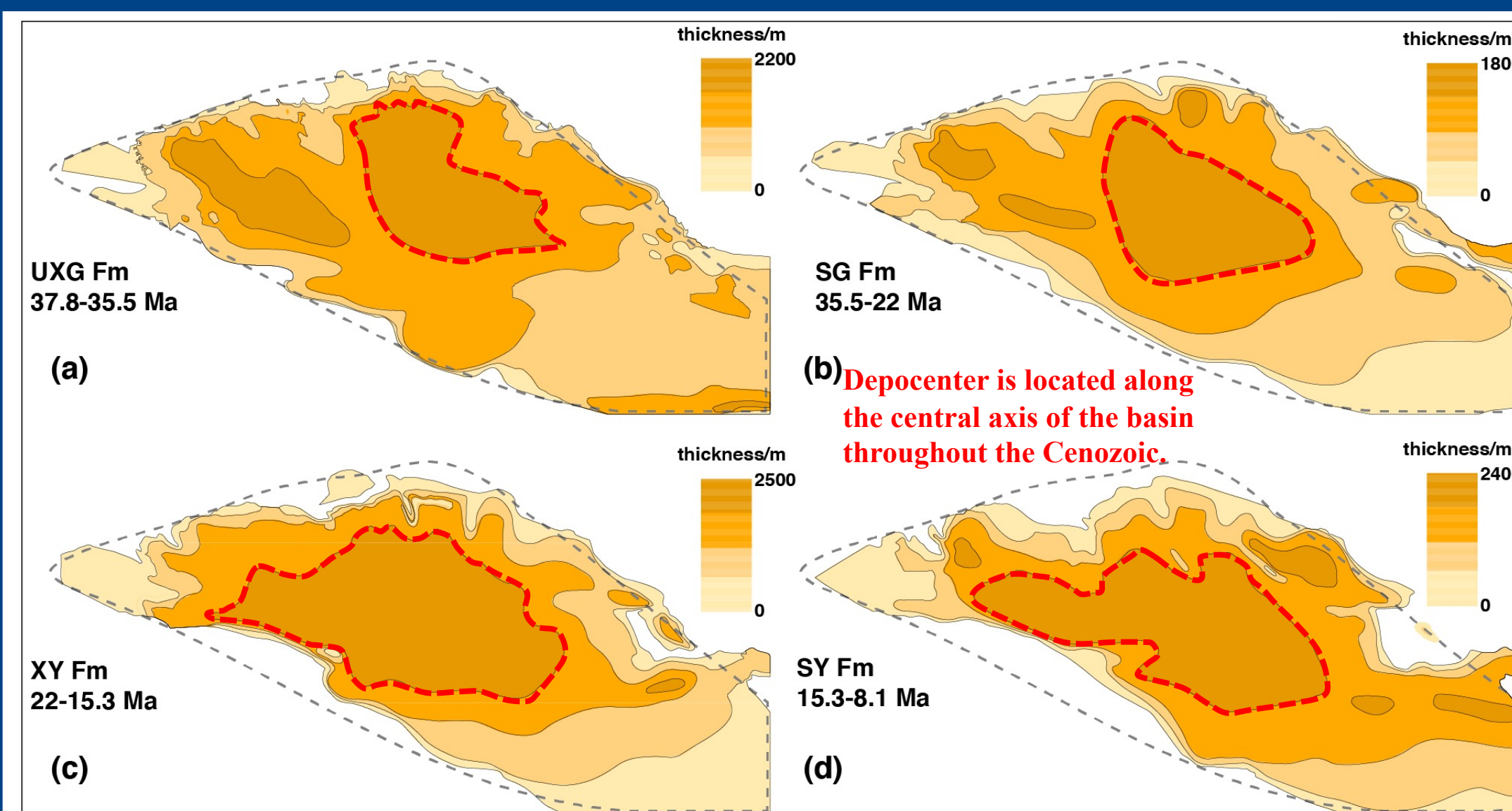


Figure 2. Typical isopach maps of the Cenozoic sediments.

## Total subsidence

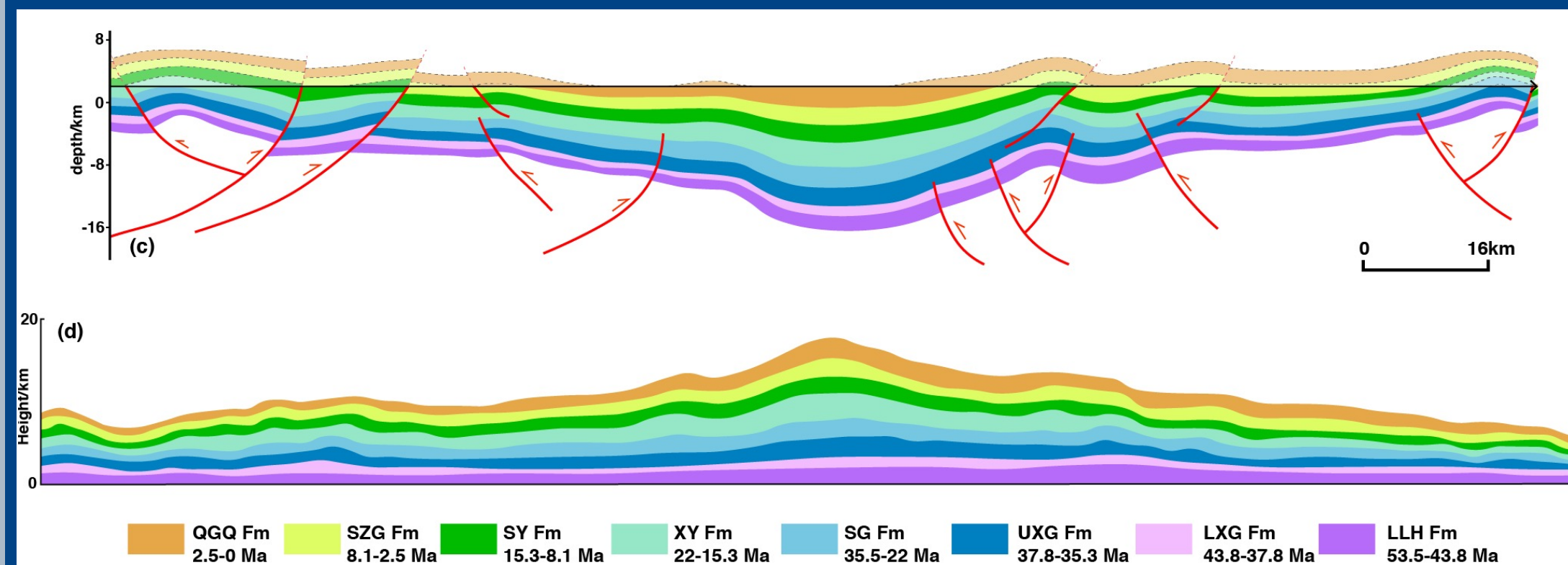


Figure 3. Geological section BB' and its reconstruction.

## Sedimentary subsidence

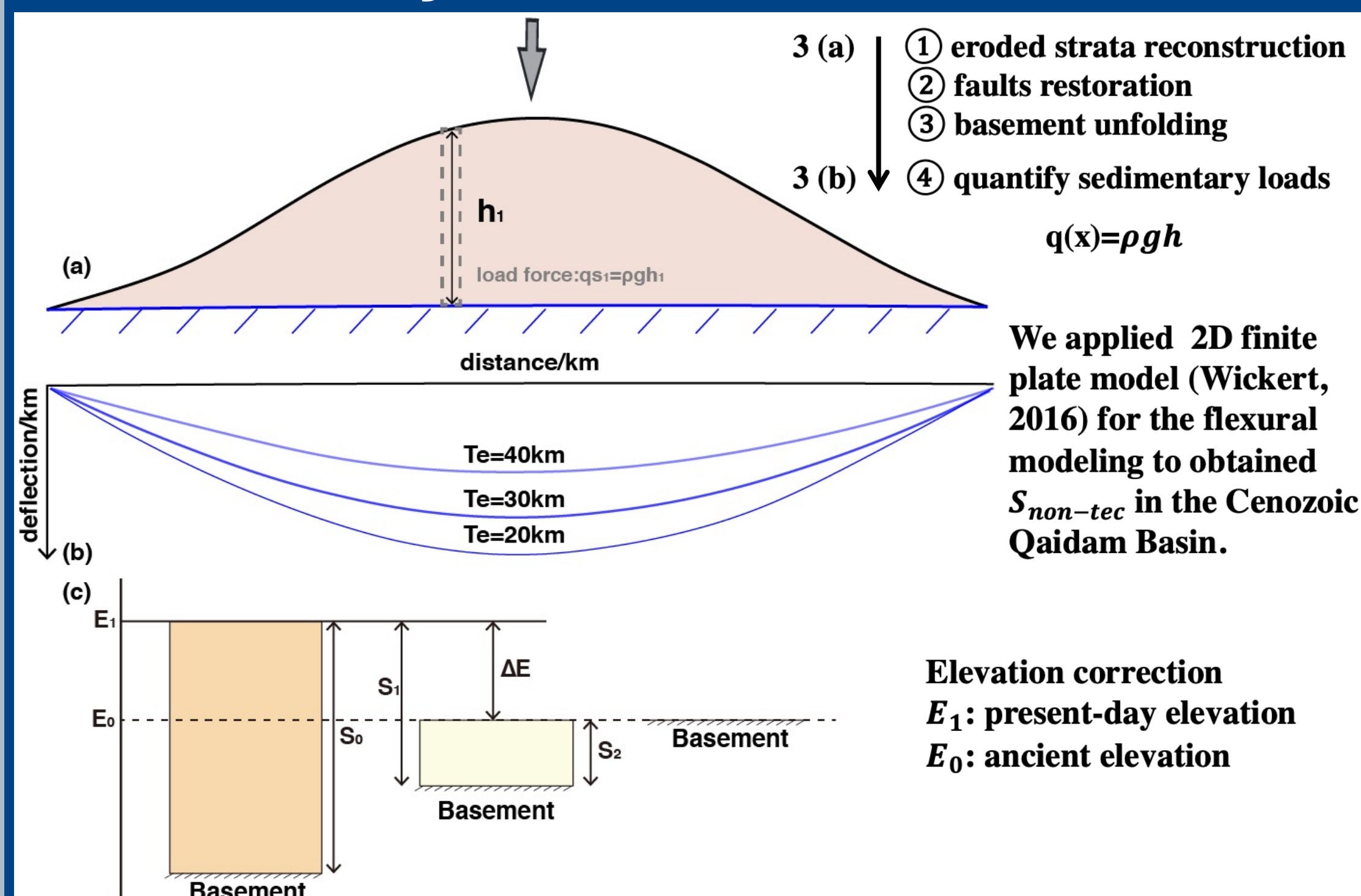


Figure 4. Schematic illustrations of flexural models and parameters. (a) Quantification of sedimentary loads. (b) Effects of loads on the finite elastic plate with  $T_e$  varies. (c) The elevation model applied to the Cenozoic Qaidam Basin.

## Tectonic subsidence

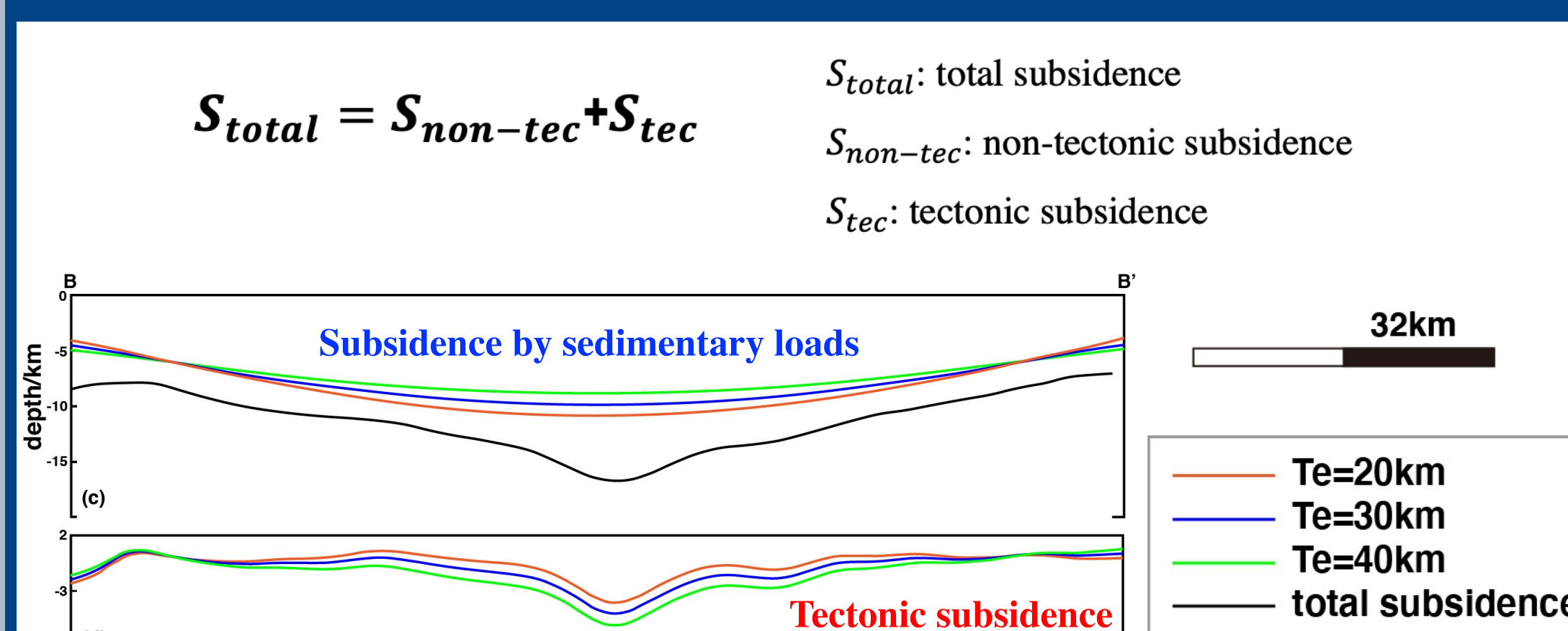
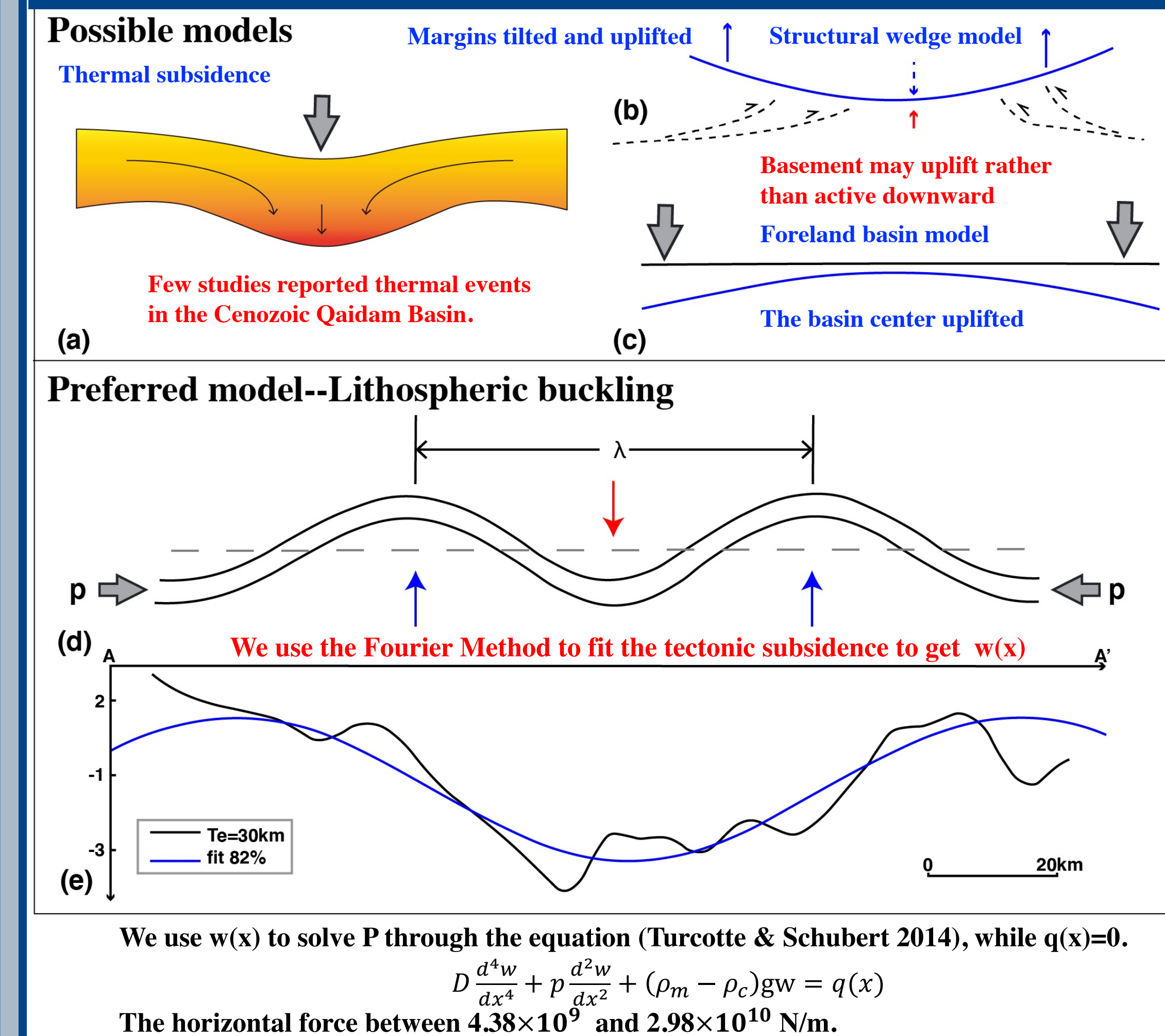


Figure 5. Results of flexural modeling.

## Subsidence mechanisms



## Evolution model

