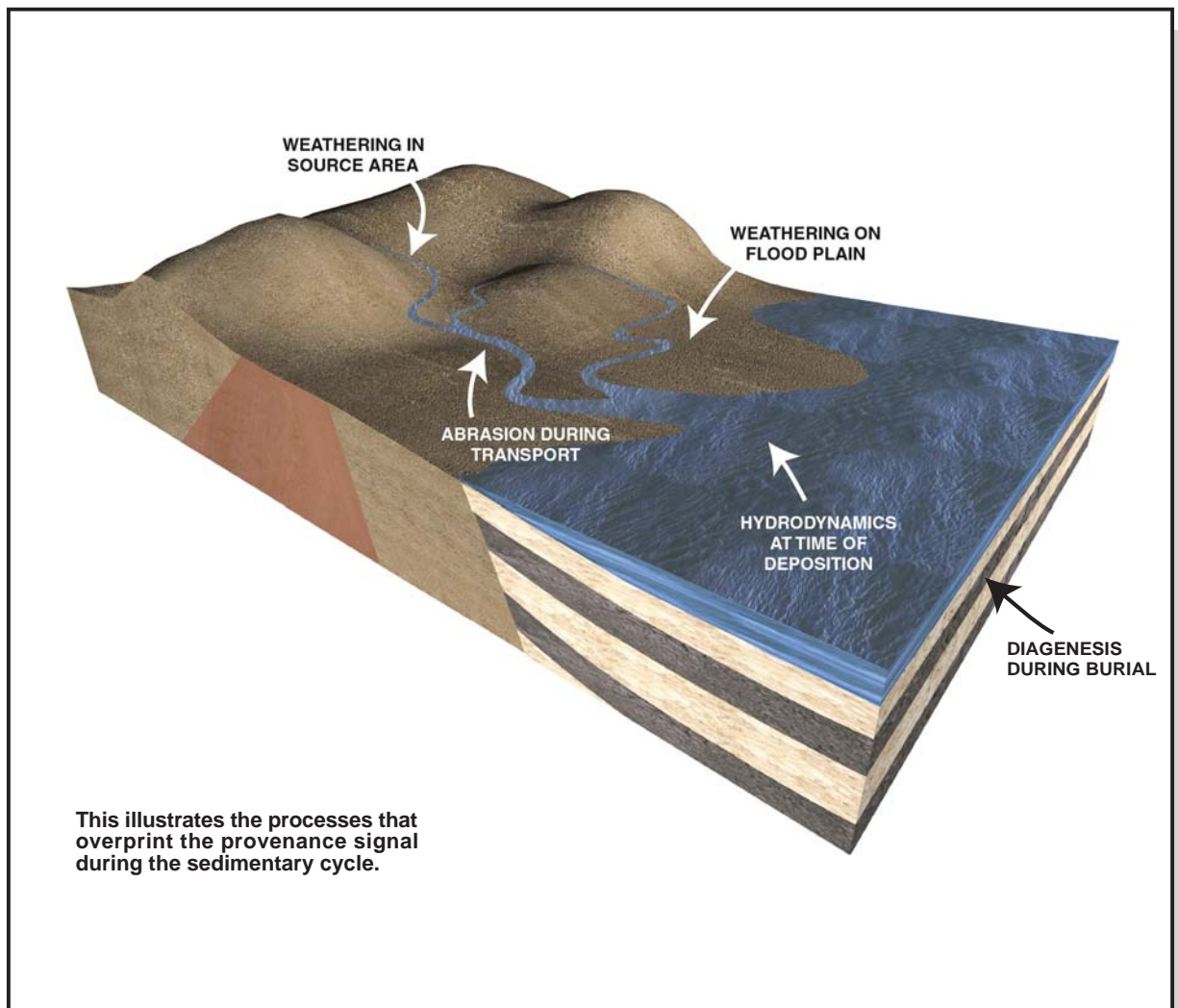


Interpretation of heavy mineral data

Processes that affect sandstone composition



Sandstone compositions result from a complex interplay between provenance and factors that operate during the sedimentation cycle. Accurate identification and discrimination of provenance depends on isolating provenance-sensitive features, and avoiding parameters that are influenced by other factors.

Heavy mineral analysis offers a high-resolution approach to determination of sandstone provenance and correlation, because the factors affecting heavy mineral assemblages have been comprehensively evaluated. The original provenance signal may be overprinted by:

- weathering at source prior to incorporation in the transport system
- mechanical breakdown during transport
- weathering during periods of alluvial storage on the floodplain
- hydraulic processes during transport and final deposition
- diagenesis during deep burial

The most influential of these processes are hydraulics, which fractionates the relative abundance of minerals with different hydraulic behaviour, and burial diagenesis, which reduces mineral diversity through progressive dissolution of unstable mineral species. Weathering during alluvial storage may also play a significant role.