

U-Pb Ages of Detrital Zircon in Quartzite from Avalon and Adjacent Terranes, New Brunswick and Nova Scotia, Canada¹

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To investigate the provenance of sedimentary units in Avalon and adjacent terranes, U-Pb ages have been determined for detrital zircon from quartzite clasts in Neoproterozoic conglomerate units in the Avalon terrane of Maritime Canada, and from quartzitic units in both Avalon terrane and adjacent Brookville-Bras d'Or terrane. These data are compared with published detrital zircon data from other units in Avalon and Brookville-Bras d'Or terranes, and from paragneissic units in the latter terrane.

Metasedimentary units in Avalon terrane show no ages younger than about 1000 Ma, in contrast to stratigraphically younger conglomerate units, which contain a high proportion of detrital ages around 600 Ma, the peak of igneous activity in Avalon terrane. Quartzite from the Brookville terrane and quartzite clasts from the Mira and Caledonia (Avalon) terranes show no ages younger than about 1200 Ma. Detrital zircon ages from these units are concentrated in the range 2000-1200 Ma, and most samples also show some late Archean ages. Paragneissic units in Brookville-Bras d'Or terrane show age peaks at ca. 700-650 Ma that pre-date the main pulse of Avalonian magmatism, and contain Mesoproterozoic zircon grains younger than those in the quartzite samples.

The broad range of ages and general similarity of the distributions suggest that Brookville-Bras d'Or terrane and Avalon terrane *sensu stricto* developed near similar large continental landmasses, possibly over an extended period of time. However, differences between them suggest that quartzite and paragneiss in the Brookville-Bras d'Or terrane are not directly related to each other or to sandstone/quartzite units in the Avalon terrane *sensu stricto*. Some components of their detrital age signatures point toward Amazonia as the associated landmass but, if so, Trans-Amazonian rocks formed only a very minor proportion of the provenance. Baltica may be a more suitable source to explain the data. Quartzite clasts in Avalon terrane *sensu stricto* show somewhat unique features such as a concentration of ages around 2000 Ma and the presence of metamorphic zircon at around 670 Ma. This zircon may have been derived from a unit such as the Hammondville Metamorphic Suite in southern New Brunswick, which has been interpreted to represent remains of an accretionary prism in Avalon.

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