

Variable metamorphic fluid conditions and metamorphic facies anomalies in the Sri Lankan Precambrian

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Chanellized fluid movements and variable metamorphic fluid conditions in the Precambrian complex of Sri Lanka bring about anomalous situations, whereby two or more metamorphic facies or subfacies are found to be represented at one locality. In these situations, metamorphic fluid escapes or is forced out from one metamorphic system and enters another, the fluid phase thus being externally buffered, resulting in facies anomalies.

Some instances of anomalous metamorphic facies associations recognized in various localities in some regions are given, as follows

In the Ratnapura - Rakwana region:

- a) garnet-sillimanite-feldspar-quartz (pyroxene-granulite subfacies); diopside-hypersthene-garnet-hornblende-plagioclase (hornblende-granulite subfacies, garnet-biotite division, upper); and diopside-hypersthene-hornblende-plagioclase (- quartz) (hornblende-granulite subfacies, garnet-biotite division, lower).
- b) garnet-sillimanite-feldspar-quartz (pyroxene-granulite subfacies); hypersthene-garnet-biotite-orthoclase-plagioclase-quartz (hornblende-granulite subfacies, garnet-biotite division, upper); and garnet-biotite-perthite-plagioclase-quartz (hornblende-granulite subfacies, garnet-biotite division, lower).
- c) diopside-hypersthene-plagioclase-quartz (pyroxene-granulite subfacies); and diopside-hypersthene-hornblende-plagioclase-quartz (hornblende-granulite subfacies, garnet-biotite division, lower).
- d) diopside-hypersthene-hornblende-plagioclase (- quartz) (hornblende-granulite subfacies, garnet-biotite division, lower); and diopside-hypersthene-garnet-plagioclase (pyroxene-granulite subfacies).
- e) hypersthene-garnet-hornblende-biotite-perthite-plagioclase-quartz (hornblende-granulite subfacies, garnet-biotite division); garnet-biotite-hornblende-perthite-plagioclase-quartz (amphibolite facies); and garnet-sillimanite-perthite-quartz (pyroxene-granulite subfacies).

In the Gampaha region:

- a) hypersthene-biotite-orthoclase-plagioclase-quartz (hornblende-granulite subfacies, garnet-biotite division, lower); biotite-orthoclase-plagioclase-quartz (amphibolite facies); and garnet-sillimanite-feldspar-quartz (pyroxene-granulite subfacies).
- b) diopside-hypersthene-hornblende-biotite-feldspar-quartz (hornblende-granulite subfacies, cordierite division); and diopside-hornblende-biotite-feldspar-quartz (amphibolite facies).

In the Kirindi Oya Basin:

- a) hypersthene-biotite-feldspar-quartz (hornblende-granulite subfacies, garnet-biotite division); biotite-feldspar-quartz (amphibolite facies); garnet-biotite-feldspar-quartz (hornblende-granulite subfacies, garnet-biotite division); and muscovite-biotite-feldspar-quartz (amphibolite facies).

These anomalous situations are recognized and explained on the basis of field and petrographic observations.