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# U-Pb Age Dating in the Grenville and Churchill Provinces in 2006-2007

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This report presents the results of U-Pb geochronology analyses on zircons carried out in 2006-2007 on ten samples collected in the Grenville and Churchill geological provinces. Two analytical methods were used, namely isotopic dilution (ID-TIMS) or laser ablation (LA-MC-ICPMS).

## **Grenvillian Allochthon, Baie-Comeau Area**

Samples 2006-AM-1030 (NTS 22F07) and 2006-MS-0235 (NTS 22F09) are from the Varin plutonic Suite. A first sample of porphyritic monzonite (2006-AM-1030) yielded an age of crystallization of  $1057.6 \pm 1.7$  Ma, whereas the second sample of porphyritic monzonite (2006-MS-0235) yielded an age of  $1007.7 \pm 1.7$  Ma. These two ages appear to confirm field observations suggesting that intrusive rocks of the Varin plutonic Suite are relatively young.

Sample 2006-AM-1346 (NTS 22F07) is a tonalitic gneiss assigned to the Baie-Comeau Complex. Based on the analysis of zircons recovered from this gneiss, the maximum age of emplacement of this unit is estimated at  $1101 \pm 18$  Ma.

Sample 2006-MS-0047 is a garnet-bearing granite sample from the Ethier Granite (NTS 22F07). Two ages were obtained for zircons recovered from this granite:  $1492.1 \pm 14.6$  Ma (Pinwarian) and  $2752.9 \pm 7.3$  Ma (Archean). These two ages are respectively interpreted as the result of a disturbance of the U-Pb isotopic system and an Archean inheritance.

## **Grenvillian Allochthon, Parc des Laurentides Area**

Samples 2006-CH-2246 (NTS 21M04) and 2006-YB-1119 (NTS 21M04) are from the Parc des Laurentides Complex. Analyses of the foliated granite sample (2006-CH-2246) indicate an age of emplacement of  $1391 \pm 11$  Ma. The lower intercept of the discordia line at  $1046 \pm 54$  Ma shows that the zircons were strongly affected by a metamorphic episode at about 1 Ga. The mangerite sample (2006-YB-1119) is from the Tourilli Pluton. Zircons recovered from this mangerite, which intrudes orthogneisses, were analyzed and yielded an age of emplacement of  $1344.3 \pm 3.4$  Ma.

## **Grenvillian Allochthon, Portneuf-Mauricie Domain**

Sample 2004-AS-0455 (NTS 31P07) is a melagabbroic dyke of the La Bostonnais Complex. This dyke is genetically related to the main mafic-ultramafic intrusion hosting Ni-Cu mineralization at the Rochette West showing. The concordia age of  $1386.1 \pm 1.2$  Ma obtained for this sample is interpreted as the age of emplacement of the mafic dykes and the main mafic-ultramafic intrusion. This age is consistent with ages previously obtained for other lithologies in the La Bostonnais Complex (1.40 to 1.37 Ga).

## **Churchill Province, Labrador Trough Hinterland, Schefferville Area**

Tonalite sample 2006-AL-0031 is from the Zeni Complex (NTS 23I16) in the hinterland zone of the Labrador Trough. The lower and upper intercepts of the discordia line indicate respective ages of  $1790 \pm 100$  Ma and  $2480 \pm 11$  Ma. The latter is interpreted as the age of emplacement of the tonalite, whereas the younger age of 1.79 Ga indicates a loss of lead associated with Trans-Hudsonian metamorphism.

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### **Grenvillian Allochthon, North Part of the Central Metasedimentary Belt**

Sample 2000-HP-3061 (NTS 31O03) is a quartzite from the Rabot supracrustal Suite in the Cain Domain. The distribution of ages obtained using the LA-MC-ICPMS method shows a peak at 1184 Ma, which represents the youngest age population. This result is interpreted as a metamorphic age rather than a maximum sedimentation age. The maximum age of sedimentation is interpreted at 1217 Ma, the age obtained from an idiomorphic detrital zircon with oscillatory structure, of probable magmatic origin. The main peak of age distribution is 1427 Ma, which suggests the dominant source for these sediments is the Lacoste magmatic Suite, for which the age of crystallization falls between 1.45 and 1.37 Ga.

Sample 1998-SN-1195 (NTS 31J14) is a quartzite from the L'Ascension supracrustal Suite in the Baker uraniferous Domain. The youngest age obtained from this sample is 1280 Ma, interpreted as the maximum age of sedimentation. A Paleoproterozoic age of 1846 Ma corresponds to the age of the dominant source, of unknown origin. Zircon analyses also indicate the existence of minor Mesoproterozoic sources (1308, 1371, 1433, and 1519 Ma), in contrast with the Rabot Suite of the Cain Domain, where the dominant source is Mesoproterozoic in age. These sources of differing ages suggest the existence of two distinct lithotectonic domains in the north part of the Central Metasedimentary Belt, even though the maximum age of sedimentation in both domains is broadly equivalent (1.2 Ga).