

The Physical Environment of the City of Greater Sudbury

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The Physical Environment of the City of Greater Sudbury

D.H. Roussel and K. J. Jansons
(Editors)

Ontario Geological Survey
Sudbury, Ontario
Special volume 6, 2002, 228 p.
Hardcover \$33
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Sudbury is one of the most famous mineral producing areas of Canada, with more than 120 years of dependence on its geological resources. According to the editors, this book represents more than 10 years of effort to assemble a summary of the hydrogeology, Quaternary geology and hydrology of the area and the impact that mining has had on the physical environment and urban development. This information, as pointed out in a preface by the Mayor of Sudbury, has hitherto been unavailable but is key to the city reinventing itself as a major urban hub of Northern Ontario with decreased dependency on mining. Ironically, as its mineral wealth becomes of decreasing importance to the city's long term future, there is greater pressure to put geoscience information into the public domain to guide future land-use planning.

There are ten chapters in the volume, which opens with a substantial review of the physical environment of the Sudbury area and its influence on urban development. It is a long story from the inception of Sudbury as a small Canadian Pacific Railway village in 1883, the first shipment of ore in 1886, the formation of Falconbridge Nickel Mines Ltd in 1928 and the opening of new company towns (largely unplanned and poorly serviced) rooted by their mines below. The narrative includes the influx of french speaking settlers taking advantage of the agricultural potential of the area's glacial sediments, the construction of the

famous Inco stack, at Copper Cliff, at 155 m the then highest in the British Empire; and on to the development of the infamous Sudbury 'moonscapes' of the 1970's consisting of more than 1000 km² of barren and impacted land. This story is well told and a good introduction to the rest of the volume. A second chapter provides a tightly written overview of the bedrock geology and mineral deposits of the area, and though clearly derived in large measure from the two-volumed 1992 Ontario Geological Survey publication, *Geology of Ontario*, is superior in that it contains thumbnails of the geology of the principal mines and up-to-date models for mineralization. Subsequent chapters review the area's Quaternary geology and the geotechnical properties and hydrogeological conditions in such sediments, and of the bedrock. An excellent well-illustrated chapter reviews the effects of mining and smelting on Sudbury's landscape; this and the following chapter on the impact on area lakes, principally Kelly Lake, underscores the effectiveness of government emission control initiatives implemented under various acid rain programs. The release of sulphur dioxide and particulate emissions from Sudbury smelters for example, was more than halved between 1970 and 1980, defining a turn-around decade for the environment of the city and its inhabitants.

With a single exception, such as the brief and exceptionally bland chapter written by two city planners that concludes the volume, all contributions to *The Physical Environment of the City of Greater Sudbury* provide very useful overviews and lengthy lists of references and as such represent major additions to public knowledge. Overall, the volume provides ample confirmation of the efficacy of federal and provincial environmental initiatives in moderating environmental impacts from mining and smelting; this volume is an attempt to ensure that good geoscience information is available for sound policy and land-use planning at the municipal level. The volume is well produced and edited, makes a valuable contribution to the geoscience literature of the Sudbury area and as such is a welcome addition to libraries.

Sequence Stratigraphy of Clastic Systems

by Octavian Catuneanu

Geological Association of Canada
Short Course Notes, Volume 16
2003, 248 pages, \$ 85

Reviewed by Anthony P. Hamblin

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Research, exploration and understanding of the stratigraphic controls on sedimentary successions and their enclosed resources, has progressed rapidly in the last quarter-century, although the real roots of the discipline date to Barrell (1917). The more recent realization that the internal architecture of sedimentary successions and the links between sedimentation, unconformities, time relationships and base-level changes can lead to novel resource exploration models and interpretations, fuelled an enormous international effort to understand the processes involved and the variety of resultant geometries. As the author of this book states, *Sequence Stratigraphy of Clastic Systems* is an attempt to "provide an in-depth coverage and critical assessment of all current ideas and models in the field of sequence stratigraphy", in order to "build a bridge between the various sequence models currently in use, facilitating communication among its practitioners and demonstrating that sufficient common ground exists to promote a unifying theory". These are grand aspirations for a set of Short Course Notes! Does the publication measure up?

This summary volume is divided into two parts, the first dealing with basic concepts and the ubiquitous jargon (including 9 chapters, 175 pages), and the second presenting practical applications of sequence stratigraphy to several clastic depositional systems (including 4 chapters, 55 pages), with a short 2-page Conclusion. The extravagant difference in page content between theory and application sections may in itself be telling us something important about one of the prime problems with