

Dyke Swarms: Keys to Paleogeographic Reconstructions,

Preface for IDC7 2016

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Focusing on geological, geochemical and geophysical aspects of dykes and related units, the International Dyke Conference (IDC) series was launched in Toronto, Canada in 1985 by Prof. Henry C. Halls (University of Toronto). It has continued approximately every five years with subsequent IDCs being held in Australia (1990), Israel (1995), South Africa (2001), Finland (2005), and India (2010). This Seventh International Dyke Conference (IDC7) is being hosted by the State Key Laboratory of Lithospheric Evolution, Institute of Geology and Geophysics, Chinese Academy of Sciences in Beijing in the Friendship Hotel on 18-20 August, 2016. The theme of IDC7 is ‘Dyke Swarms: Keys to Paleogeographic Reconstruction’. It concentrates on mafic dyke swarms and related igneous associations (e.g., sills, volcanics, etc.) with a special emphasis on paleogeographic reconstructions based on geological comparison and paleomagnetic studies. By middle July, 140 participants from 27 countries had registered for the meeting.

This three-day conference also includes one pre- and two post-conference field trips. Field Trip A (the “East Route”, 14-17 Aug, led by Shuanhong ZHANG) travels to Chengde City with an emphasis on 1730-1680 Ma anorogenic associations, 1320 Ma Yan-Liao large igneous province (diabase sills), and Late Paleoproterozoic-Mesoproterozoic strata in North China; Field Trip B (the “South Route”, 21-24 Aug, led by Guiting HOU) travels to the Taishan Mts with an emphasis on greenstone belt magmatism (including komatiites) and Late Paleoproterozoic dykes. Field Trip C (the “West Route”, 21-24 Aug, led by Peng PENG) travels to the Wutai Mts with a special emphasis on the 1780 Ma Taihang dykes, 925 Ma Dashigou dykes, as well as 2150, 1970, 1730, and 1320 Ma sills/dykes and their country rocks. There will be also a celebration in honour of Prof. Henry C. HALLS (19 August 2016, evening).

In this special volume, 133 abstracts are included, which cover the following 10 themes/topics:

Theme 1: Regional maps/reviews of dyke swarms and related units

Scope: This theme concentrates on new regional-, craton- or country-scale maps of dyke swarms (and related igneous units, where possible). We also welcomed reviews of the characteristics of dyke swarm record (and related units) for individual cratons with a special emphasis on newly recognized giant dyke swarms.

Conveners: Rajesh SRIVASTAVA & Yusheng WAN

Keynote addresses: Mingguo ZHAI, Richard ERNST & Nasrddine YOUBI

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Invited speakers: Anil KUMAR, Dmitri GLADKOCHUB, Michael T.D. WINGATE, Zakaria HAMIMI & Massinissa AMARA

Theme 2: The role of giant dyke swarms in the reconstruction of supercontinents/paleocontinents: progress, problems and potential

Scope: This theme reviews current paleogeographic reconstructions of paleocontinents/supercontinents, emphasizing the role of dyke swarms in these reconstructions: as key paleomagnetic targets, for their potential to be restored back into a primary giant radiating geometry, and through identifying neighboring crustal blocks on the basis of matching regional dyke swarms and their associated LIPs.

Conveners: Richard ERNST & Shihong ZHANG

Keynote addresses: Henry C. HALLS, David EVANS, Sergei PISAREVSKY & Guochun ZHAO

Invited speakers: Steve DENYSZYN & Baochun HUANG

Theme 3: Mapping of dykes using remote sensing techniques: such as aeromagnetic data, LANDSAT, radar, etc.

Scope: This theme explores the range of methods for remote mapping of dykes: aeromagnetic data, LANDSAT, Google Earth, radar, etc, and includes presentations on both methodologies and case studies.

Conveners: Steve DENYSZYN & Jinghui GUO

Invited speaker: Rajesh SRIVASTAVA

Theme 4: Geochronology of dyke swarms

Scope: This theme explores the latest developments in geochronology (particularly U-Pb dating) as applied to dyke swarms.

Conveners: Xianhua LI & Michael T.D. WINGATE

Keynote address: Mike HAMILTON

Invited Speakers: Ulf SÖDERLUND & Qiuli LI

Theme 5: Petrology, geochemistry and petrogenesis of dykes

Scope: This theme focuses on the petrology and geochemistry of dykes. Relevant topics include macro- to micro-scale petrogenetic processes, constraining mantle sources, differentiation processes, assimilation, contamination, and tectonic setting analysis.

Conveners: Yigang XU & Peng PENG

Keynote address: Yigang XU

Invited speakers: Xianhua LI

Theme 6: Emplacement mechanism of dykes

Scope: This theme focuses on stress analysis and emplacement mechanisms of dykes. Presentations address how tectonic environment, the regional stress field, country rock fabric, and other factors can affect the emplacement and propagation of dykes. Also addressed is recent progress in experimental and numerical modeling on the emplacement mechanisms of dykes.

Conveners: Guiting HOU, Elson Paiva de OLIVEIRA & Wilson TEIXEIRA

Keynote addresses: Eleonara RIVALTA & Andrew BUNGER

Invited speakers: Nan ZHANG

Theme 7: Dyke swarms and planetary bodies

Scope: This theme focuses on planetary dyke swarms, their relationship with other magmatic units, and implications for tectonics and crustal evolution.

Convener: Daniel MEGE

Keynote address: Amanda NAHM

Theme 8: Links to mineralization and resources

Scope: This theme concentrates on mineralization and other resources (including hydrocarbons and aquifers) which are related to dykes and Large Igneous Provinces.

Conveners: Richard ERNST & Guochun ZHAO

Keynote address: Simon JOWITT

Invited speaker: Shuanhong ZHANG

Theme 9: Miscellaneous: Synplutonic mafic dykes and alkaline dykes, etc.

Scope: This theme discusses research on non-dyabase dykes.

Conveners: Christina Yan WANG & Shuanhong ZHANG

Keynote address: Christina Yan WANG

Theme 10: Oceanic Dike Complexes: Sea Floor Spreading, Oceanic Plateaus, or Juvenile Arcs?

Scope: This session focuses on the characteristics of sheeted dike complexes preserved in different ophiolites, and discuss the relative balance between rates of extension and magma supply at sea-floor spreading centers. Comparison with dike complexes from varied environments, and discuss ways to discriminate them from those formed at oceanic spreading centers.

Conveners: Tim KUSKY & Paul ROBINSON

Keynote address: Tim KUSKY

Invited speaker: Jeffrey KARSON