

Wissenschaftliche Konferenz
„Vom Mineral zur Noosphäre“
aus Anlass des 150. Geburtstages von Vladimir Ivanovič Vernadskij
(1863-1945)

Berlin, 15. März 2013



Foto: P. Knoll, 15.03.2013

**Internationale
Lagerstättenforschung in
Eurasien**

**MLS Reimar Seltmann
London**

**Die nachfolgenden Darstellungen
stellen die nicht abschließend
lektorierten Präsentationen des
Vortragenden zur Konferenz am
15.03.2013 dar.**

**Sie dienen ausschließlich als Basis
für fachliche Diskussionen; sie sind
nur für den privaten Gebrauch
bestimmt und nicht für die
Weiterverwendung freigegeben.**

150. Geburtstag von V.I.Vernadskij - Berlin: 15. März 2013

Internationale Lagerstättenforschung in Eurasien

Reimar Seltmann, CERCAMS NHM London



AN ATLAS OF THE U.S.S.R.

16 MAPS
with explanatory text

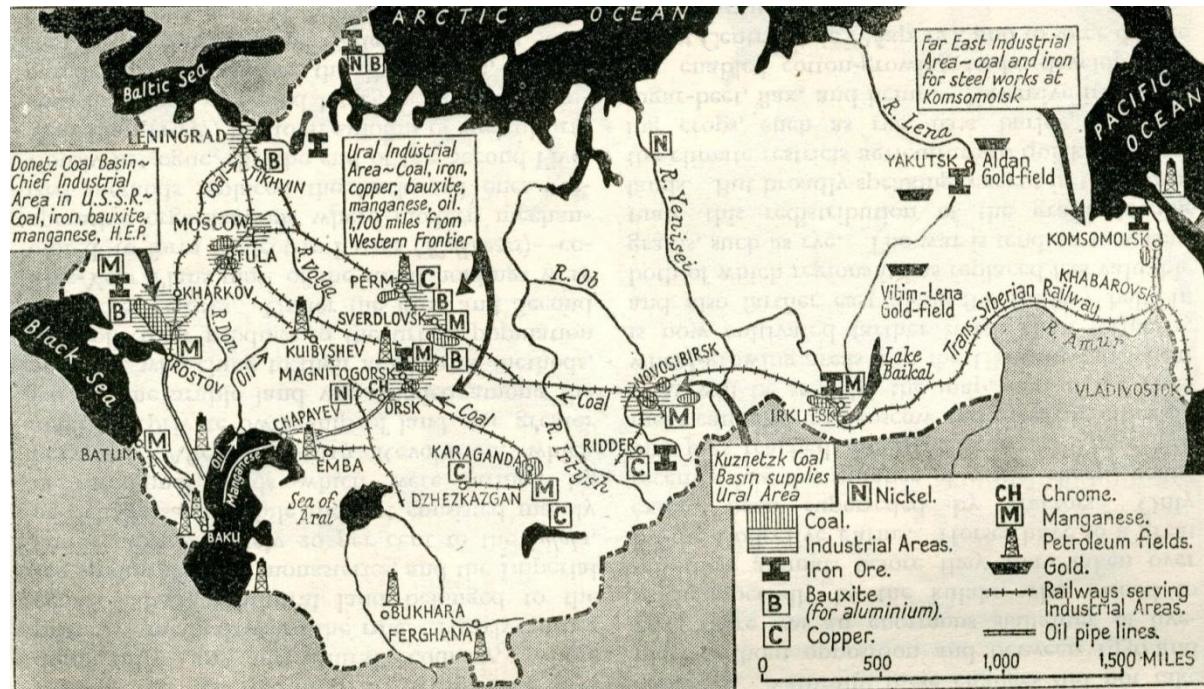
by
JASPER H. STEMBRIDGE



OXFORD PAMPHLETS
ON WORLD AFFAIRS

First published June 1942

*The Oxford University
Press*



"The U.S.S.R. has enormous mineral resources, and, unlike Germany, she is self-sufficient in most of the strategic materials essential to modern warfare."

Problemkomission PK IX – “Krustenbau und Metallogenie” Kooperation der AdW sozialistischer Staaten

Проблемная комиссия IX
многостороннего сотрудничества Академий наук
Социалистических стран

“Геосинклинальный процесс и становление земной коры”

Подкомиссия 4, Р.Г. 4.5
“Магматизм и минерализация в связи с
фанерозойскими тектоническими процессами”

МАГМАТИЗМ И МИНЕРАЛИЗАЦИЯ В РУДНЫХ ГОРАХ / ГДР

Геологические, геохимические, петрологические
и минерогенические материалы для полевых работ,
сентябрь и-ц 1984 г. в ГДР



Академия наук ГДР
Центральный институт физики Земли
Отдел III (геология)

Потсдам 1984 г.

Multilateral Cooperation of the Academies of Sciences
of the Socialist Countries

Problem Commission IX
Working Groups 3.3 and 3.4

**Late Palaeozoic and Caenozoic Continental
Sedimentation and Magmatism
in the southern part of the G.D.R.**

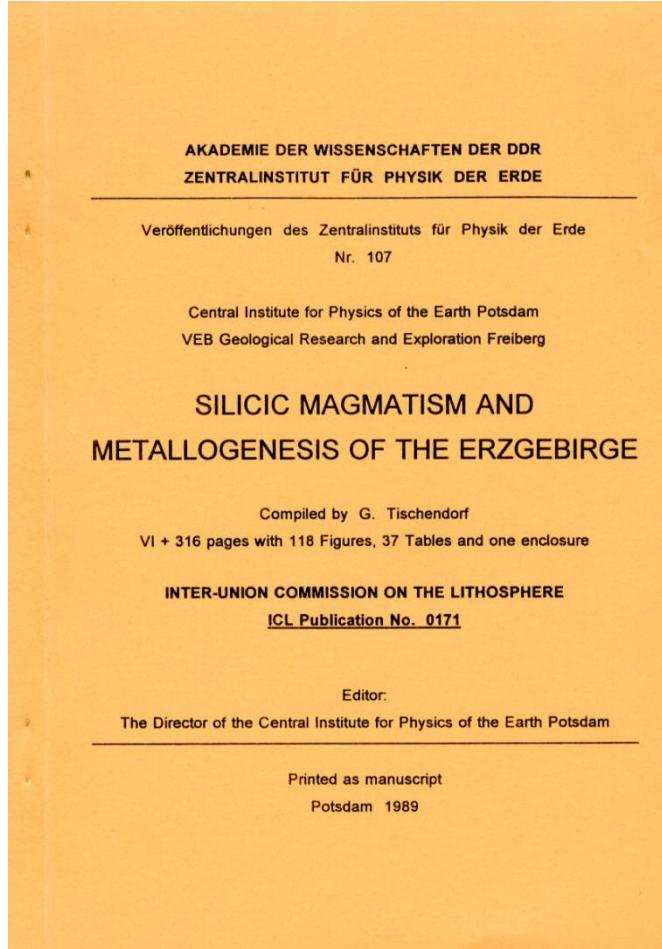


Guidebook of Excursions
in the German Democratic Republic
May/June 1985

Academy of Sciences of the G. D. R.
Central Institute for Physics of the Earth

Potsdam 1985

State-of-the-Art Compilation ZIPE AdW Potsdam (1989)



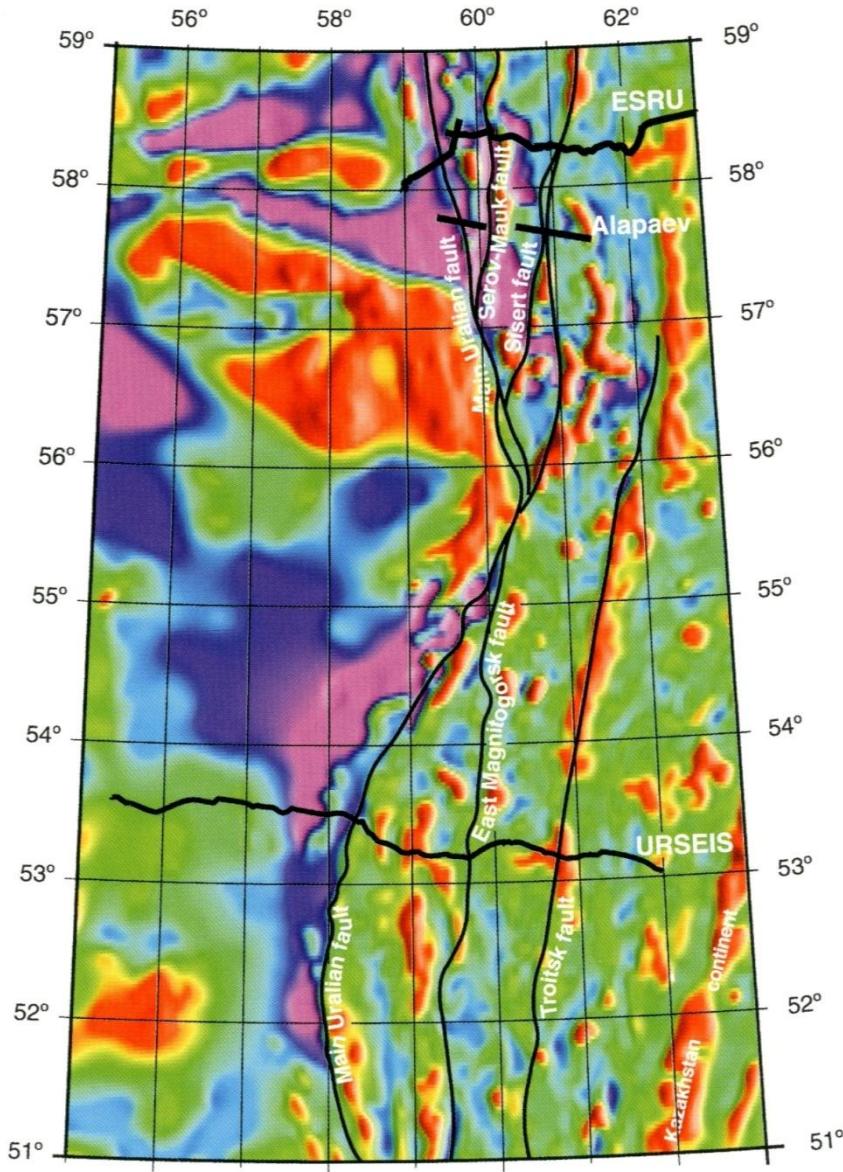
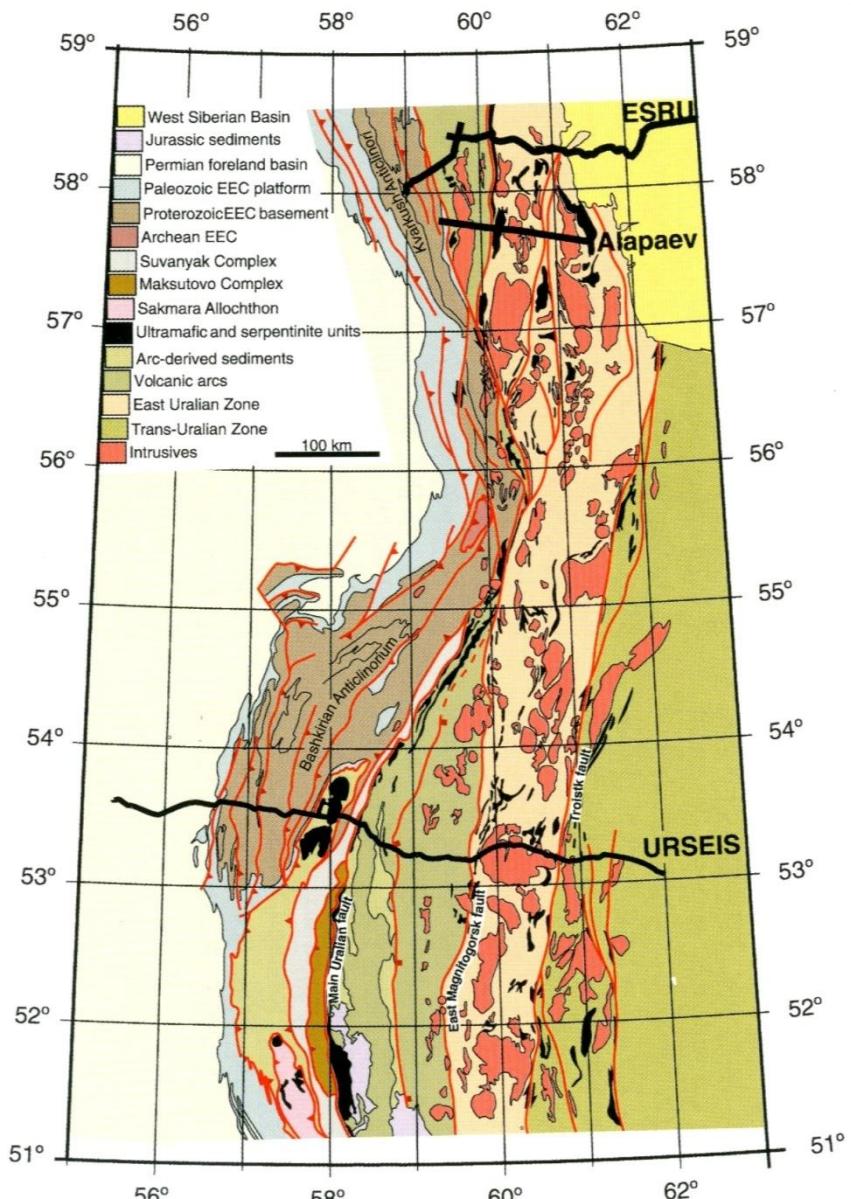


Plate 1. (a) Simplified geological map of the Southern and Middle Urals showing the location of the URSEIS, ESRU and Alapaev reflection seismic surveys. (b) Magnetic map of the Southern and Middle Urals showing the location of the seismic surveys and the main tectonic boundaries that they cross.



Centre for Russian and Central EurAsian Mineral Studies (CERCAMS)



- Academic research and training program founded in 2002
- International research network serving mining industry
- Runs two annual workshops and expert trips
- Closely linked with NHM Mining Consultancy



ЩЕГЛОВ
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ALEXEY DMITRIEVICH

Academician of the Russian Academy
of Sciences

Kronverkская, 29/37, кв. 104
197101 St.-Petersburg, Russia
т. 232-95-54

My dear Chris!

Thank you very much for warm congratulation on the
occasion of my election.

Thank you also for the interesting paper.

Yours Letter was "running" to me the whole month, but
finally it has reached the destination. You still under
the Comusco impressions. I was greatly benefitted by this
trip.

Thank you and Dr. Halls for the excursion.
Soon, my paper dealing with the Comusco mineral deposits,
is supposed to be published; it discusses their genesis from
the "Russia" viewpoint. I'll send it to you.

If you come to Russia in February, you may stay at my home
in St Petersburg. You know that my apartment is
spacious enough, and I shall be pleased to have you
as my guest. Please, write me about this.

Also I request you to give me more information on
the possibility for my younger specialists to study at

Всероссийский научно-исследовательский геологический
институт им. А.П. Карпинского (ВСЕГЕИ)



All - Russia
Geological Research Institute (VSEGEI)
St. Petersburg, Russia



Deepening of research cooperation initiated in September 1992:

A letter from former Director of VSEGEI,
Academician of RAS A.D. Shcheglov, to
Dr. C.J. Stanley, Deputy Keeper of the
Mineralogy Department at NHM London -

**"Also I suggest you to give me more
information on the possibility for my
younger specialists to study at your
museum. We have some bright boys."**

your museum. We have some bright boys.

I wish you success in everything

Yours
Leifer-L

September 30, 1992.



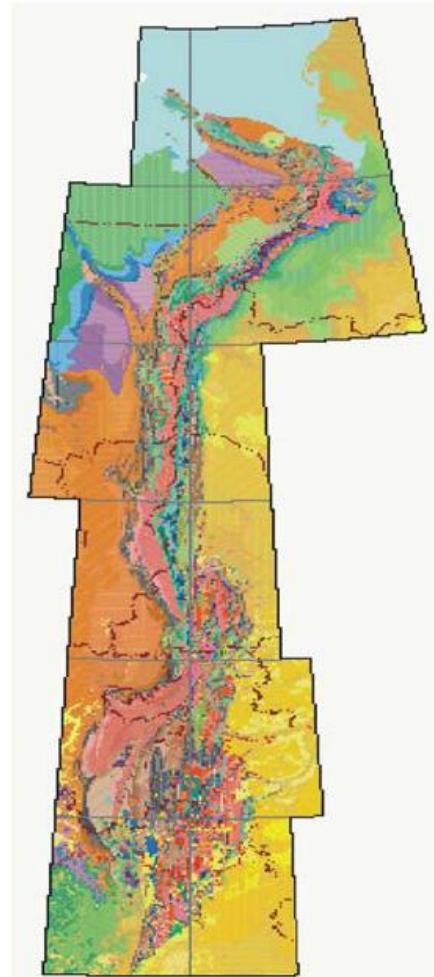
Natural History Museum,
London, UK



Centre for Russian and
Central EurAsian Mineral
Studies (CERCAMS),
NHM London, UK



All-Russia Geological Re-
search Institute (VSEGEI),
St. Petersburg, Russia



Short Description (Explanatory Notes)

Mineral Deposits of the Urals

1M Scale Map and Database: ArcView 3.2 GIS Package

*Edited by O. Petrov, V. Shatov, O. Kondian, K. Markov, G. Guriev,
R. Seltmann and R. Armstrong*

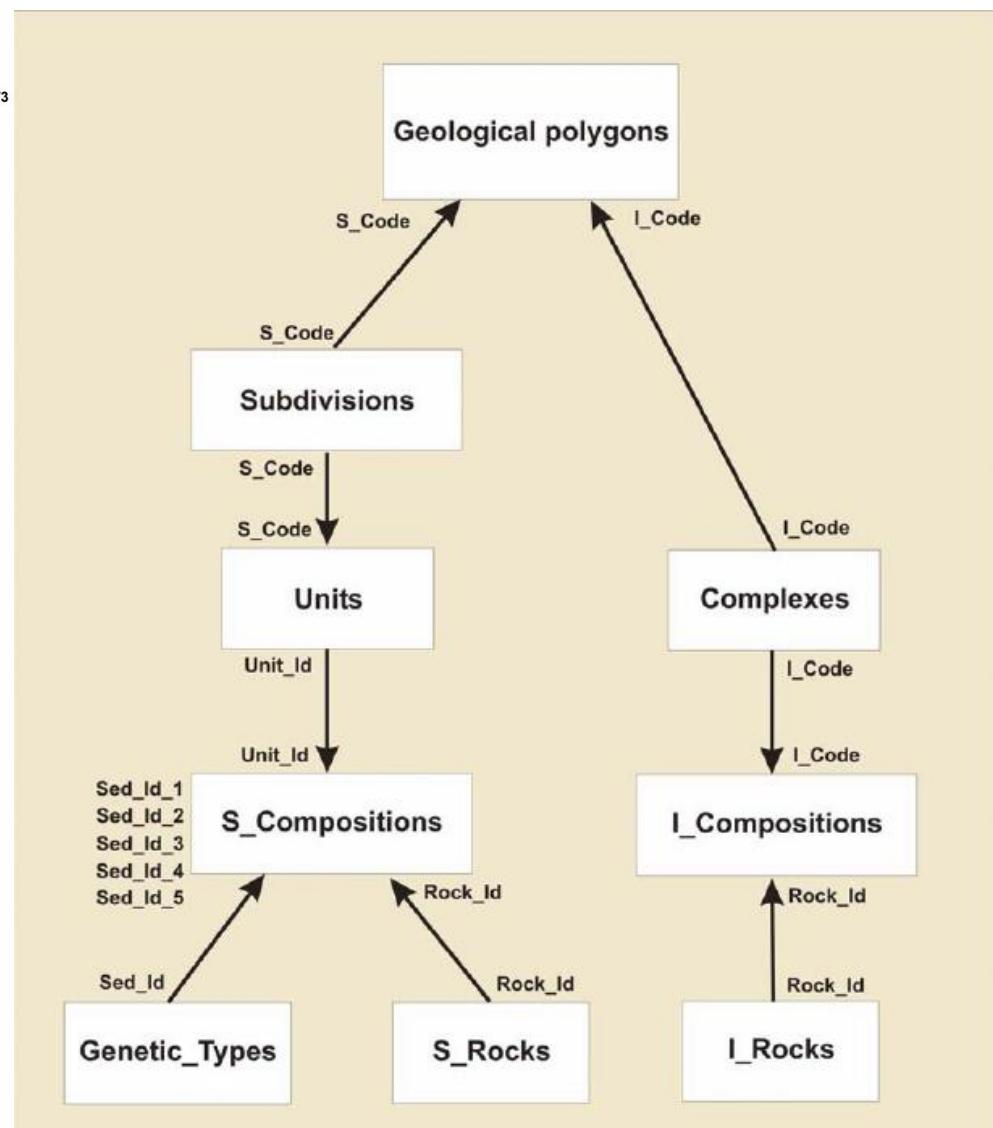
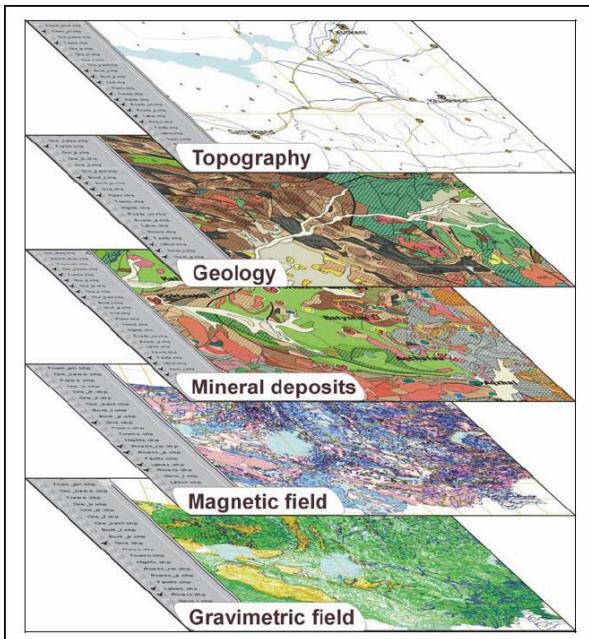
St.-Petersburg – London
2006

Cooperation NHM – CIS (VSEGEI, RAS, NAS) in development of GIS technology

**Mineral Deposits Database and Thematic Maps of Central Asia, Scale 1.5 million:
ArcGIS 9.2, ArcView 3.2 and MapInfo 6.0(7.0)
GIS Packages**

Explanatory Notes

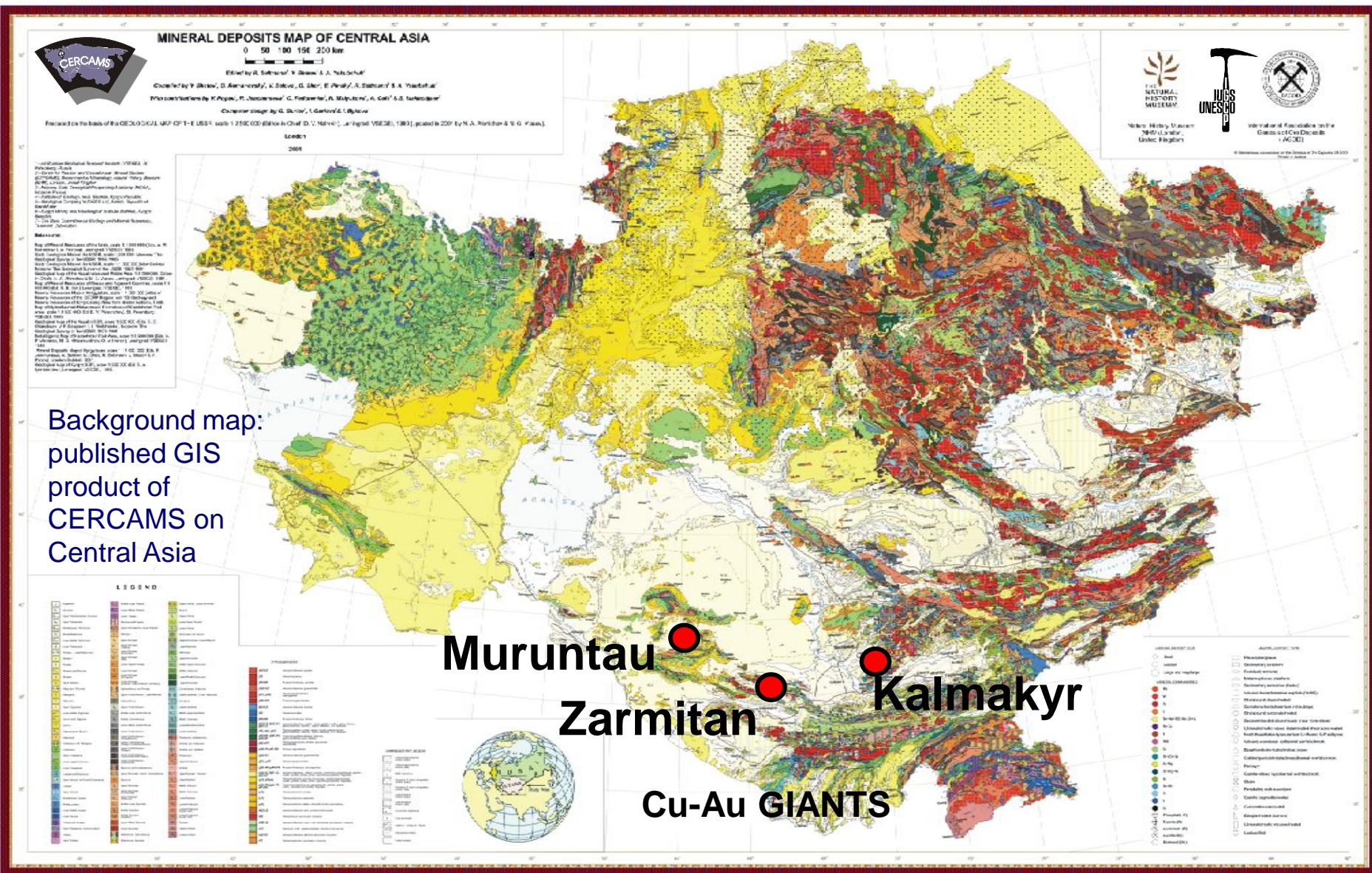
Edited by Reimar Seltmann, Vitaly Shatov & Alexander Yakubchuk



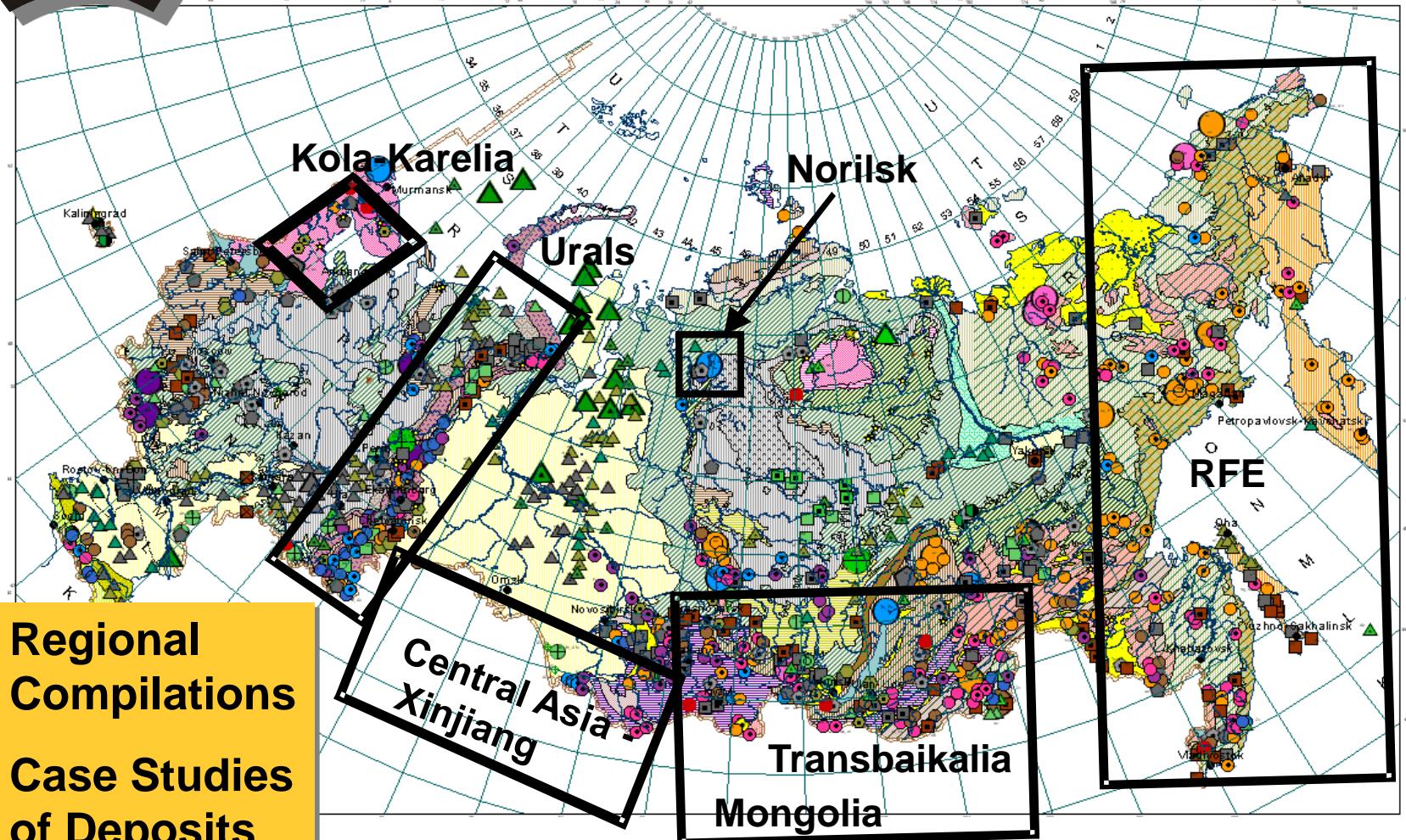
Scheme of the relations between tables of lithology database (arrows direct from origin to destination table).

Geology and Mineral Deposits GIS of Central Asia (2001-2013)

by R. Seltmann, V. Shatov & A. Yakubchuk



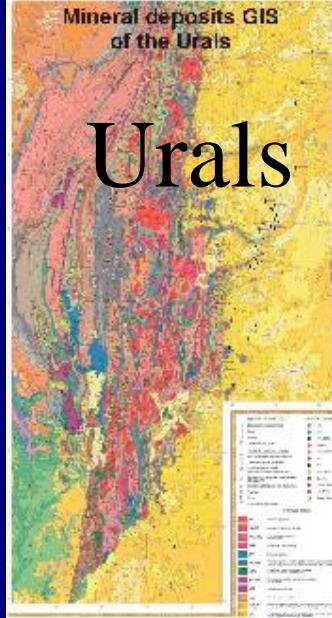
REGIONS OF CERCAMS INVESTIGATIONS SHOWN OVER THE MINERAL RESOURCES MAP OF RUSSIA



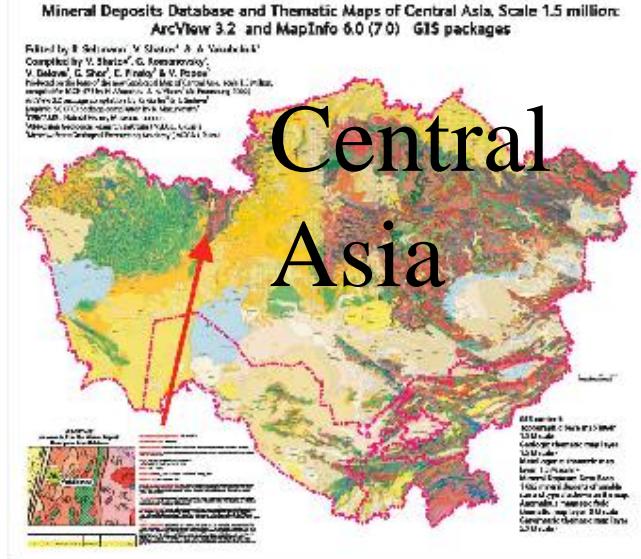
Source map at http://www.sgm.ru/eng/science/gbd/gis/russia_frm.html



Altaids study builds partially on existing proprietary products



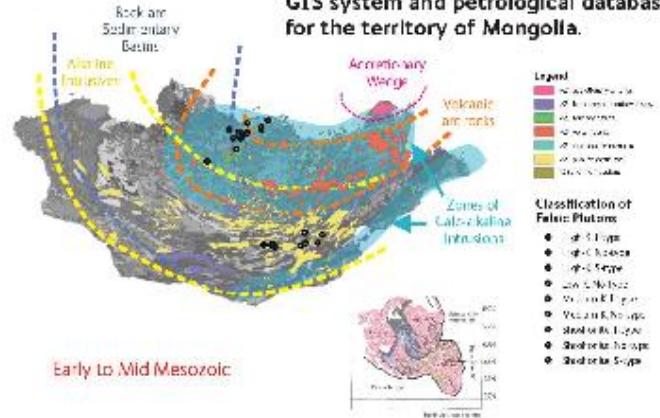
Urals



Central
Asia

Mongolia

GIS system and petrological database for the territory of Mongolia.



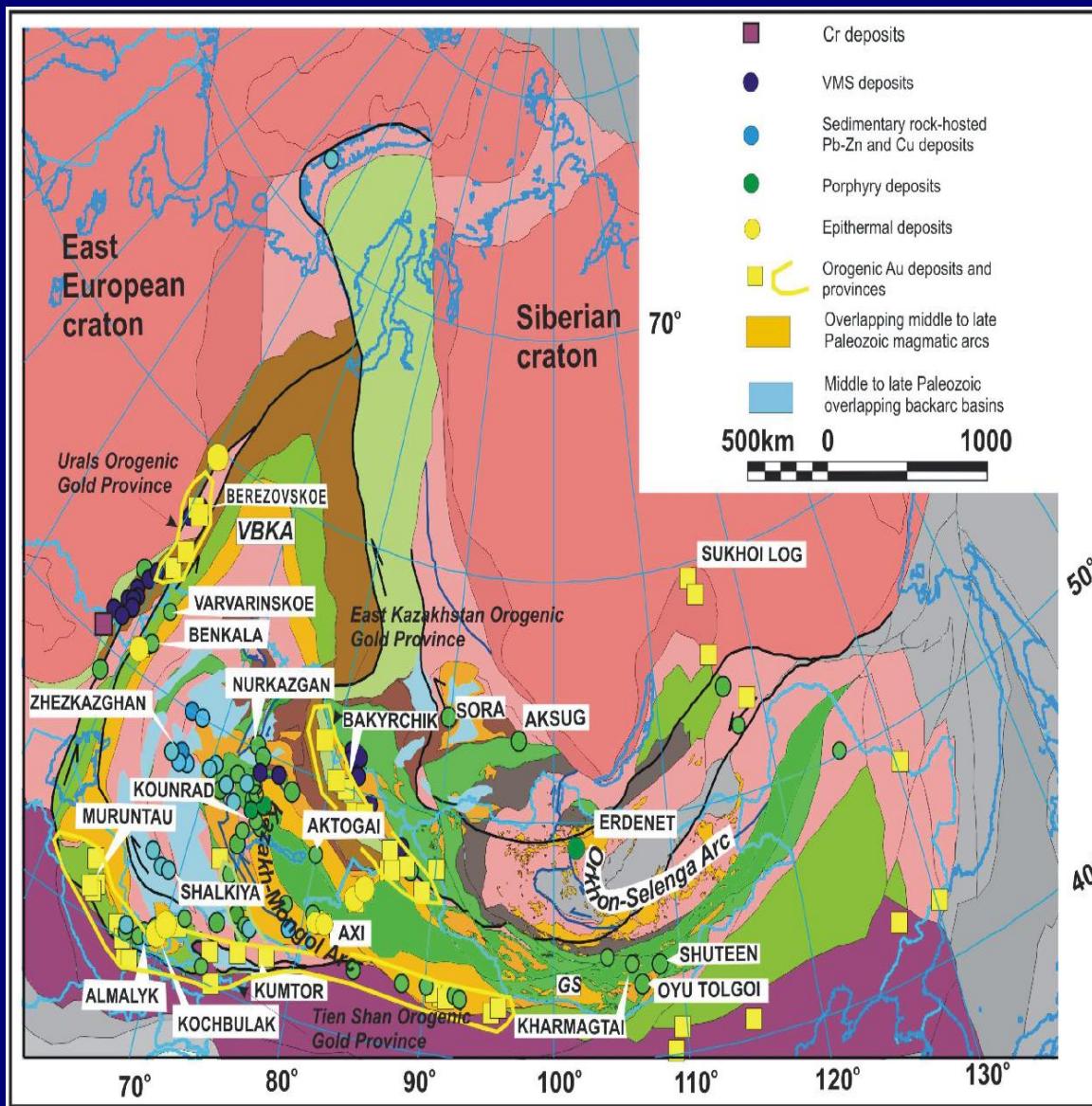
Tienshan

Synchronization: Synthesis of Geology and Mineral Deposits GIS for Altaids

Simplified tectonic map of the Altaiid and adjacent collages in Central Eurasia showing Paleozoic arc systems and key mineral deposits VBKA - Valerianovka-Beltau Kurama; GS - Gurvan-Saikhan terrane (Yakubchuk et al. 2005).

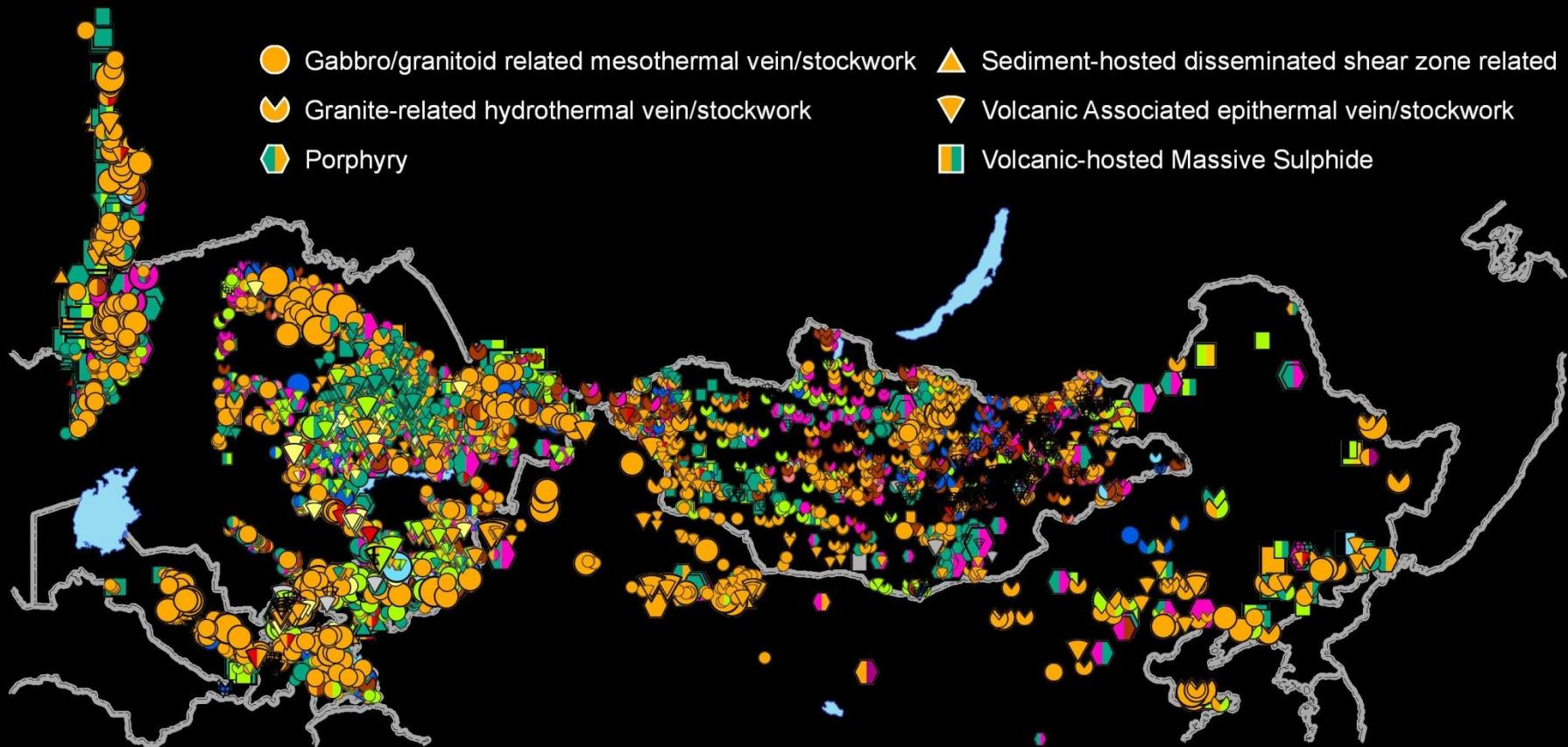
Western Altaids
(Central Asia,
Kazakhstan,
Urals and
Xinjiang)

Eastern Altaids
(Mongolia
and Inner
Mongolia)



CERCAMS
research
2006-2010
aimed to
reconstruct
mineral
potential of
Central
Eurasia

Distribution of Deposits Types CAOB





NATURAL
HISTORY
MUSEUM

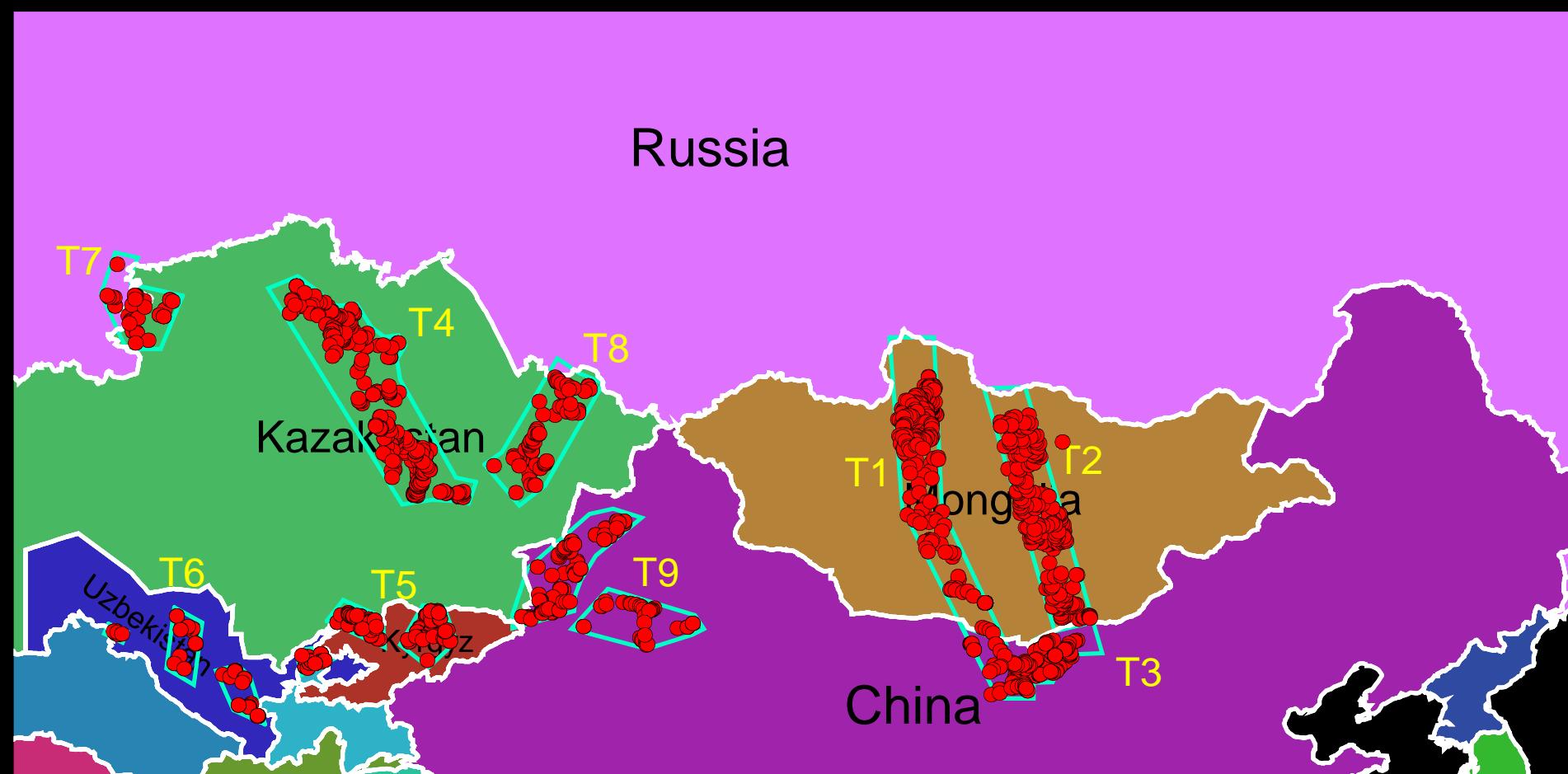


CERCAMS Altaids project 2006-2010

Aimed to combine data within an interpretative approach through:

- Assembly of petrochemical database and interpretative layers
- Integration of geochronology data with petrochemistry and terrane analysis
- Time-slice reconstructions from GIS package
- Synthesis of GIS package for whole Altaids

Altaids Project ROI and location of Transects (1500 samples)

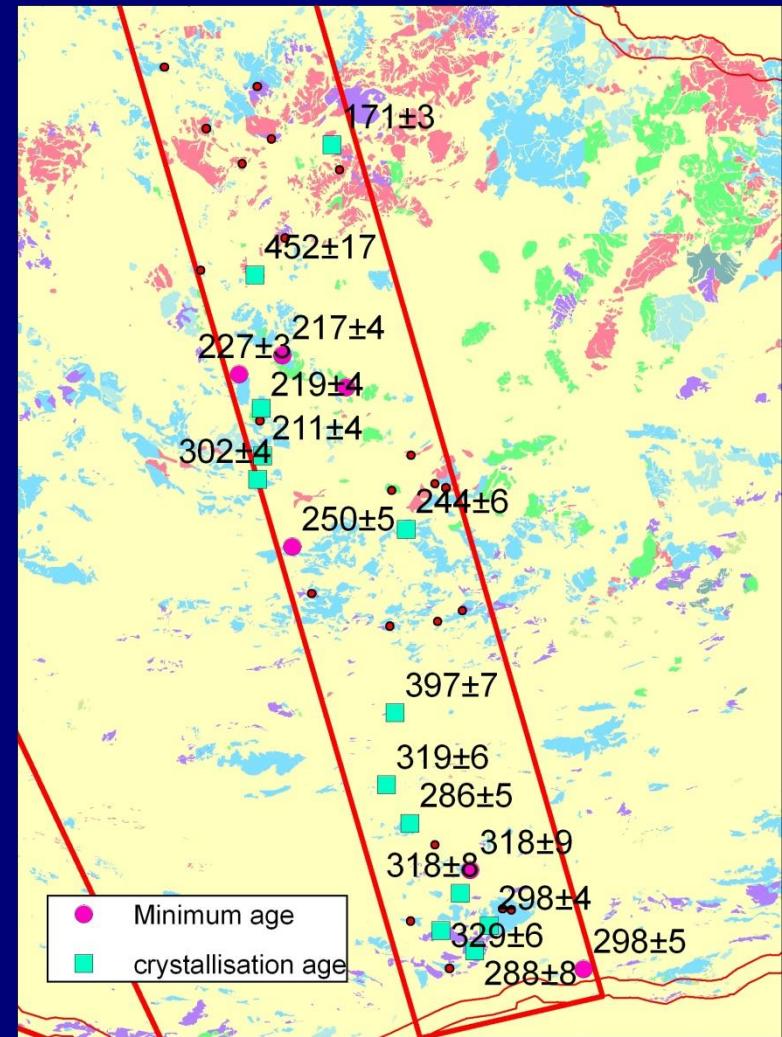
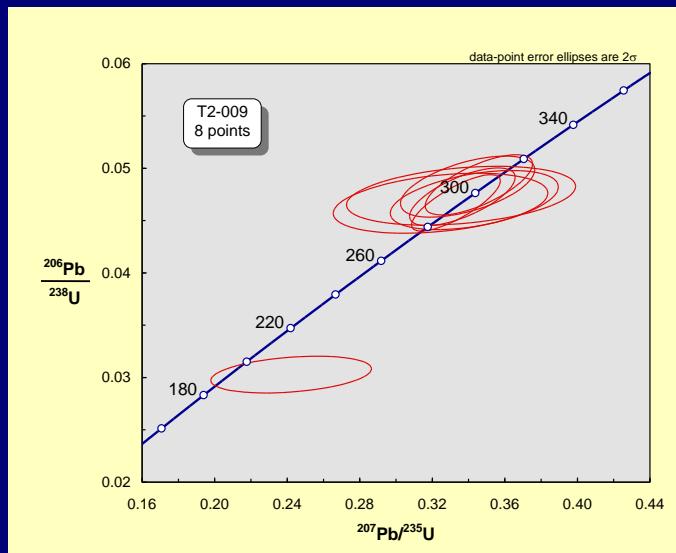
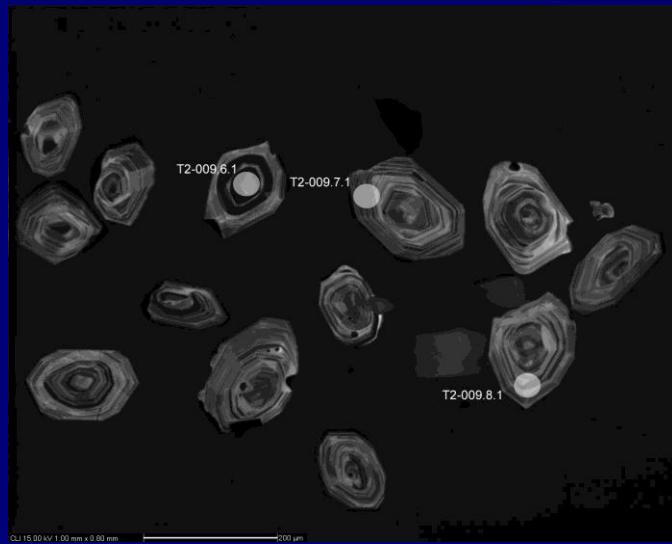


Expedition challenges



SHRIMP-II U-Pb dating of >400 granites at CIR VSEGEI

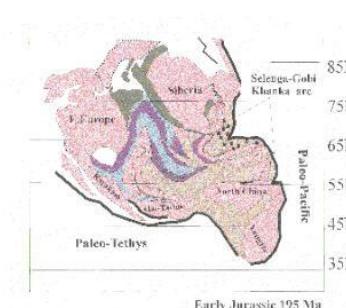
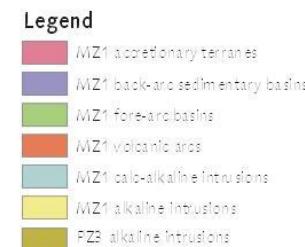
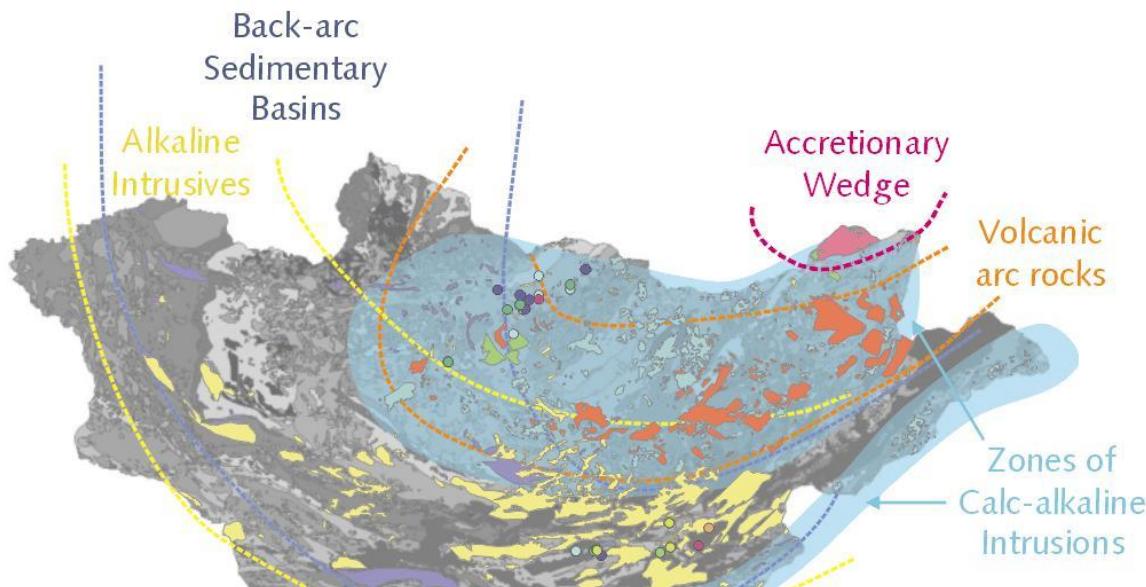
(Ore-bearing intrusions: Almalyk & Muruntau / UZB, Kounrad, Bakyrchik, Bozhakol / KAZ, Oyu Tolgoi / MON, Kule / XJ, Taldybulak / KYR, Erzgebirge / D)



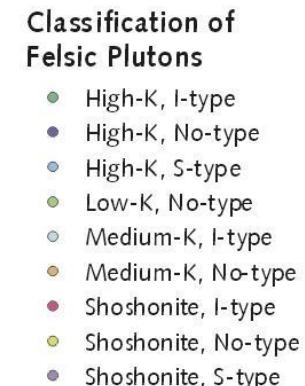
Analysis of magmatic belts of Mongolia utilising a new combined geology map and petrochemistry GIS product

Early to Mid Mesozoic

Tectonic Interpretations, Mongolia



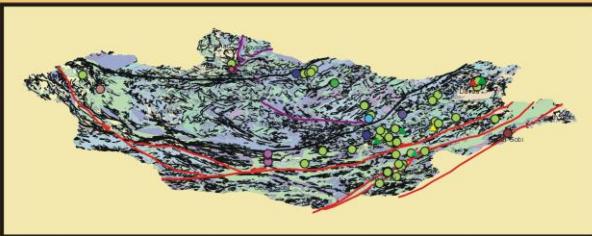
From NHM CERCAMS report 2004
by Herrington et al. with VSEGEI
contributions by V. Shatov, E.
Pinsky, G. Shatkov (Published in
Seltmann et al., 2005)



“Uranium of Mongolia” (by Yu.B. Mironov, VSEGEI) English Edition by CERCAMS NHM, London 2006

URANIUM OF MONGOLIA

Yu. B. Mironov



London 2006

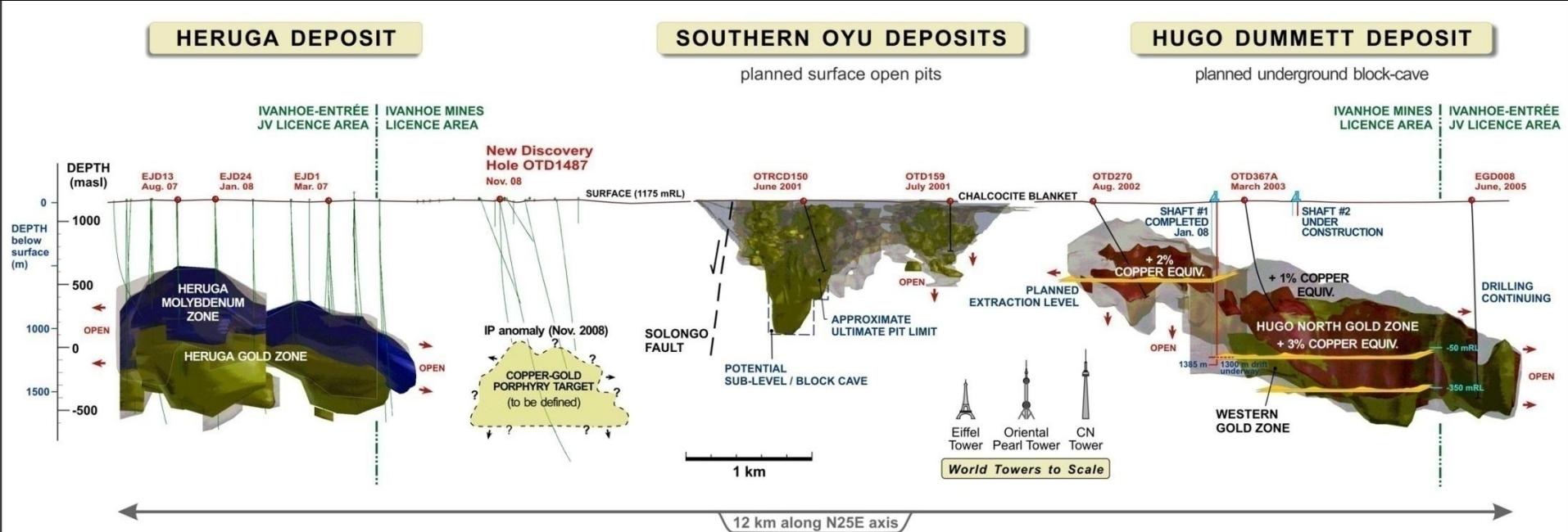
***Edited by R. Seltmann and A. Dolgopolova
English version translated by V.S. Popov
NHM-CERCAMS London, 2006, 230 p.
ISBN 5-8198-0049-4***

CONTENTS

- Chapter 1. Exploration of Uranium Ore Mineralization in Mongolia**
- Chapter 2. Geotectonics**
- Chapter 3. Mineral Resources of Mongolia: Principal Features**
- Chapter 4. Distribution of Radioactive Elements in Rocks**
- Chapter 5. Types of Uranium and U-Bearing Mineralization**
- Chapter 6. Uranium Ore Districts and Permissive Districts**
- Chapter 7. Estimation of Uranium Resources in Mongolia**
- Conclusions**
- References**

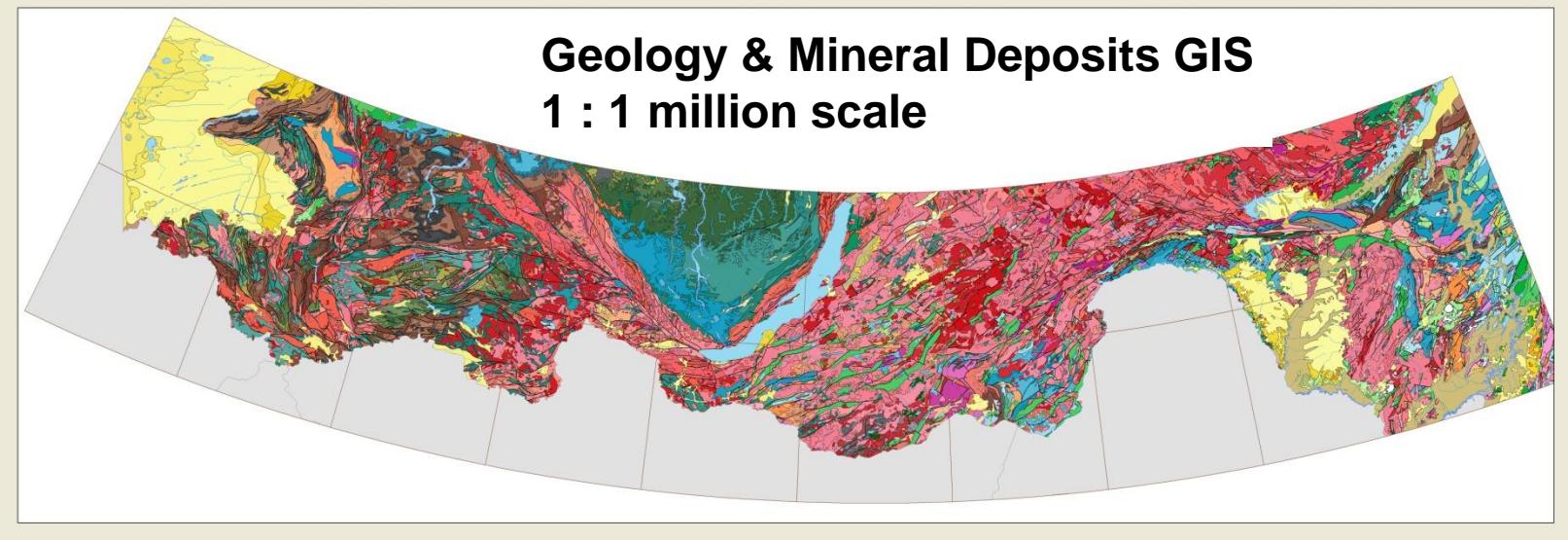
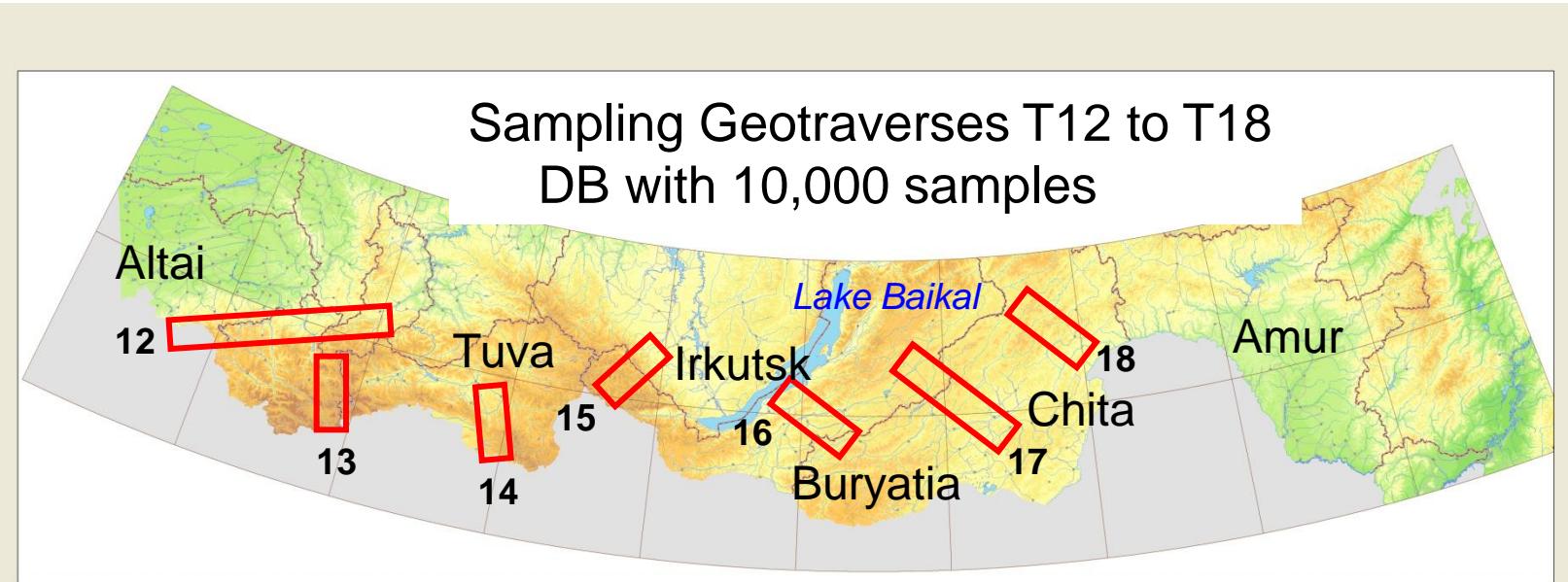
Oyu Tolgoi trend: long section

(Source: Rio Tinto / Ivanhoe Mines websites)

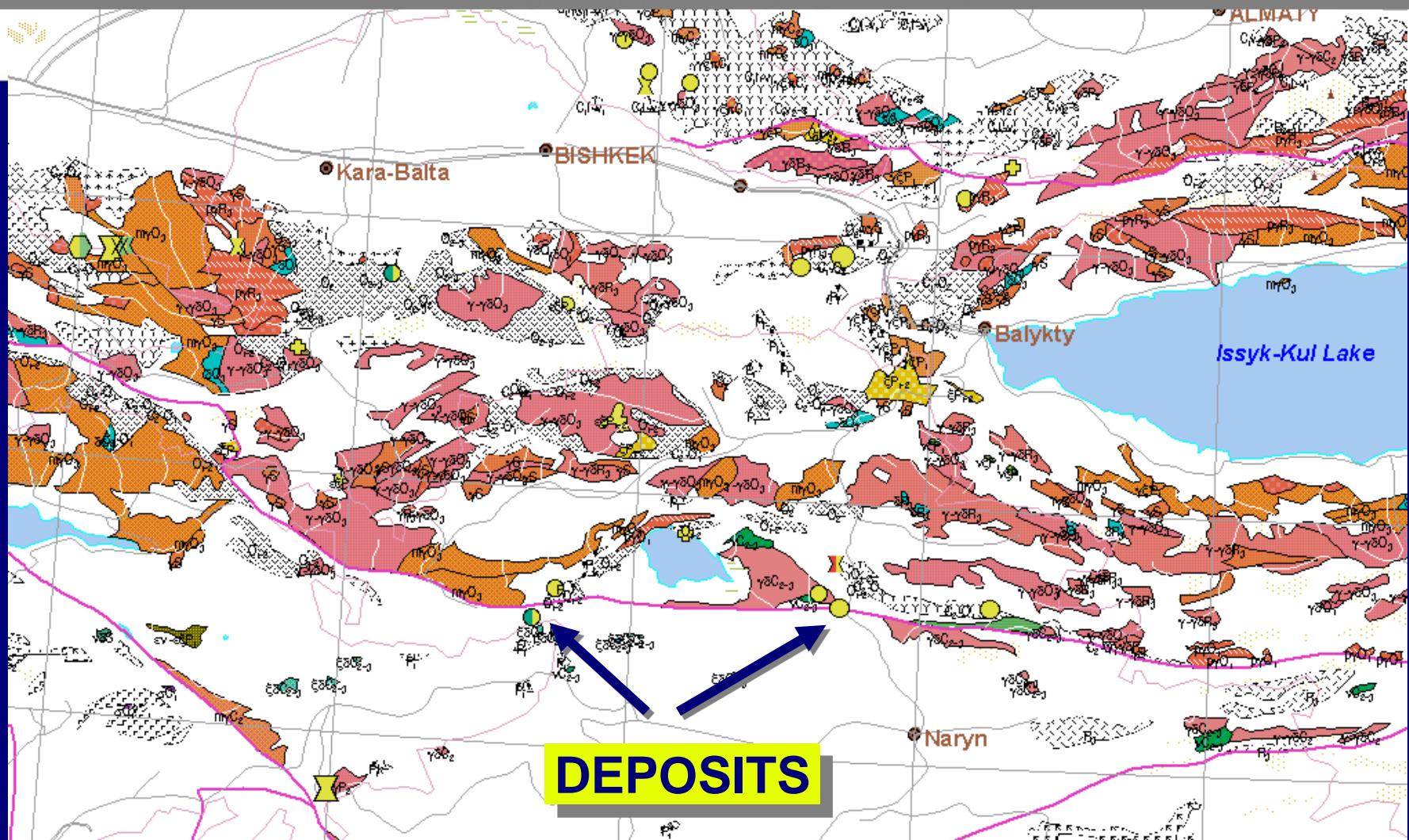


Measured and indicated resource of 1,390 Mt at 1.33 % Cu, 0.47 g/t Au, and an inferred resource of 2,200 Mt at 0.83 % Cu, 0.37 g/t Au (at 0.6% Cu equiv. cut-off)

Identifying new target regions in the Altaids of Central Asia, Kazakhstan and Russia through geotraverses and terrane reconstructions: South Siberia



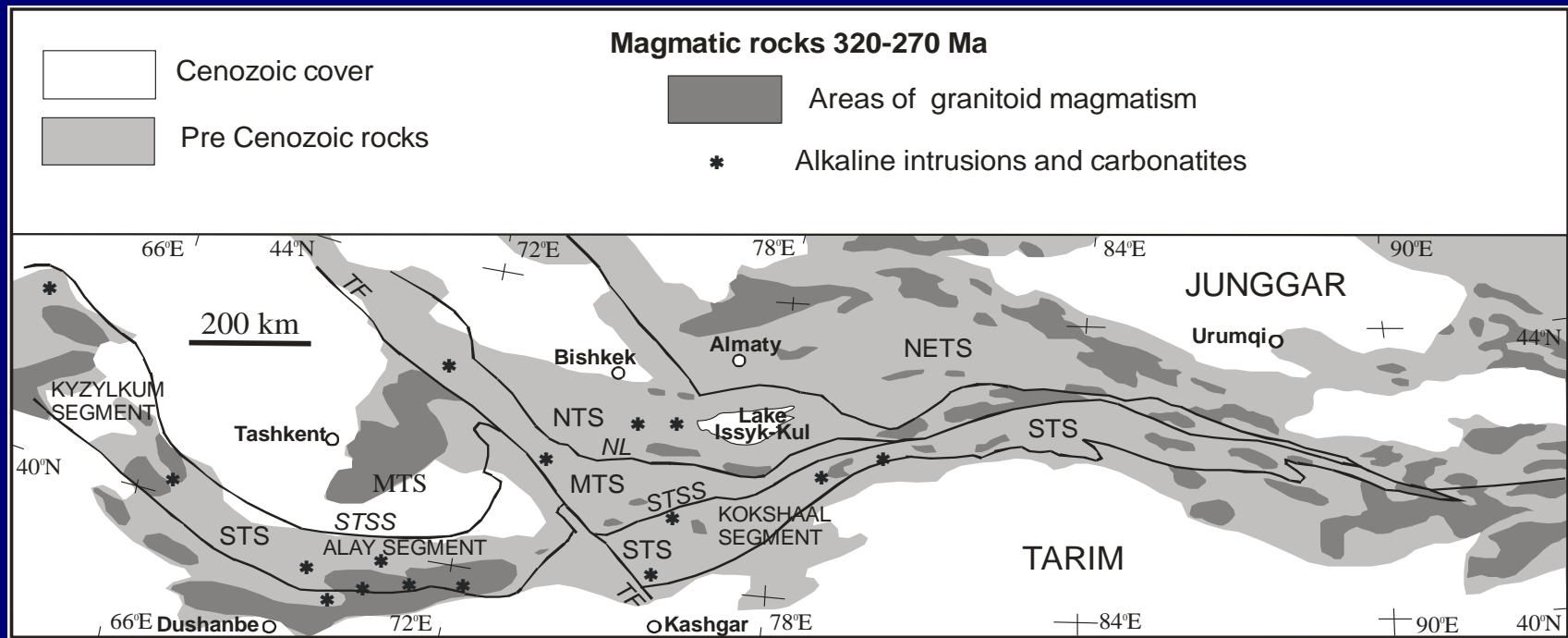
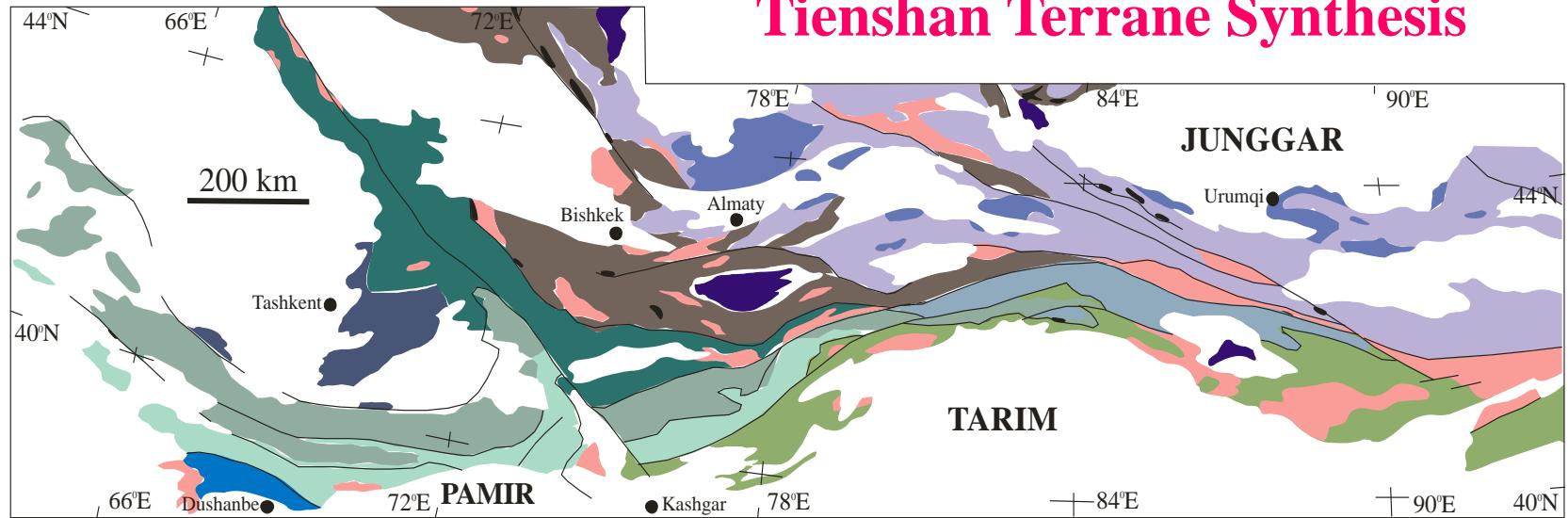
Tienshan terrane synthesis of magmatic arcs and their Cu-Au mineralization from Xinjiang to Kyzylkum, scale 1 : 1.5 million



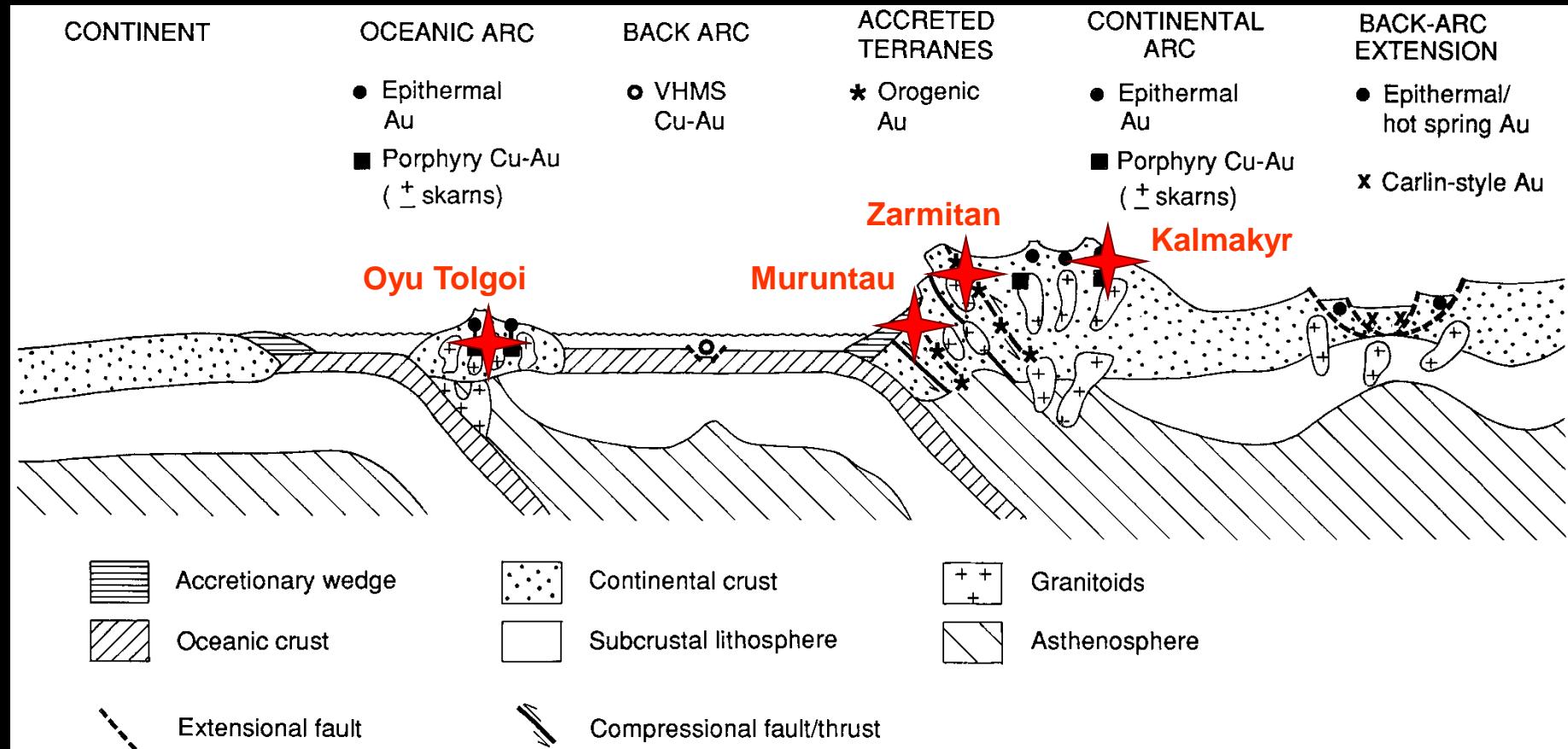
Project allows extrapolation and geological synthesis across the CIS-PRC state borders



Tienshan Terrane Synthesis



The Exploration Model



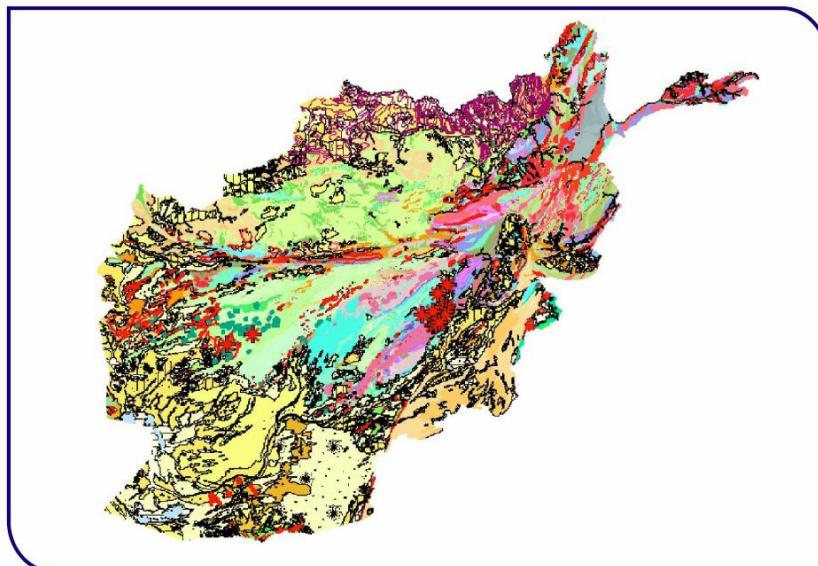
(from Seltmann & Dolgopolova 2009, modified after Groves *et al.*, 1998)

**Tectonic setting of gold-rich mineral deposits
and position of large Cu/Au deposits**



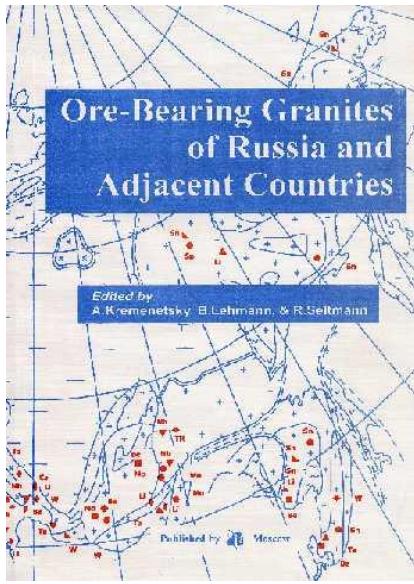
Afghanistan GIS

Mineral Deposits Map & Database of Afghanistan
Scale 1: 500 000: ARCMAP 8.3 GIS package



Afghanistan GIS content includes:

- Map of infrastructure showing:
 - roads
 - rivers
 - towns and villages
- Geologic thematic map layer based on the Map of Mineral Resources of Afghanistan 1:500 000 scale (Abdullah and others, 1977) including:
 - geological polygons showing stratigraphic age and lithology
 - structural points and lines
 - dykes
- Mineral deposits thematic map layer based on the Map of Mineral Resources of Afghanistan 1:500 000 scale (Abdullah and others, 1977) including:
 - metal resources
 - industrial minerals
 - hydrocarbon resources



International Geological Correlation Programme (IUGS-UNESCO, IGCP Project 373)
Institute of Geology, National Academy of Sciences, Tashkent, Kyrgyz Republic
Natural History Museum, London, United Kingdom

IGCP 373 Field Conference in Blaytak and the Kyrgyz Tien Shan
18–25 August 2001 & Pre-meeting Field Trip to
of the Joint Tin-Bismuth SGA-SEG Meeting in Krakow, Poland



Excursion Guidebook

R. Selmann & R. Jenchurayeva (Eds.)

**Paleozoic Geodynamics and Gold
Deposits in the Kyrgyz Tien Shan**



International Geological Correlation Programme (IUGS-UNESCO, IGCP Project 373)
Reports of Union Geological Congress, Tashkent, Kyrgyz Republic, 2001
Institute of Mineralogy, Oceanography and Bryant Chalcocite
of the Chinese Academy of Sciences (IMOCHE, CAS)
Geoforschungszentrum Potsdam (GFZ)



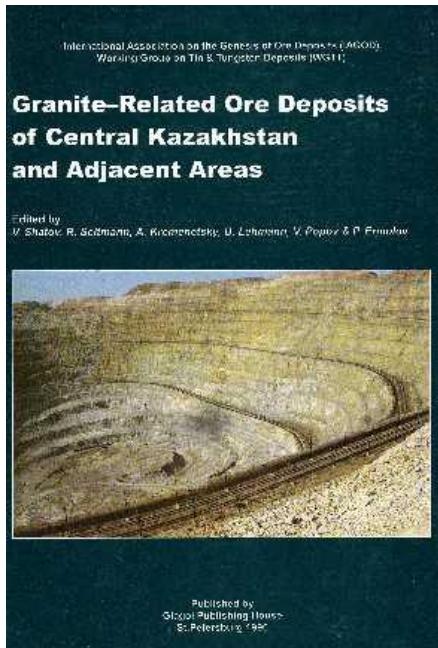
International Field Conference of IGCP-373
Excursion 4B of the joint SGA-IGCP Symposium
London/Tashkent 27/28 August – 4 September 1999



Excursion Guidebook

T. Shiyakabutov, F. Islamov, A. Kremenetsky & R. Selmann (Eds.)

**Au, Ag, and Cu Deposits
of Uzbekistan**



Acknowledgements

On behalf of NHM CERCAMS team I thank the many friends and colleagues from the former Soviet Union, now Russia and adjacent countries of the former Soviet Union for inspiring discussions and courtesy of materials.

THANK YOU!



Greenfield exploration ground in the Kyrgyz Tien Shan