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Keywords: Tectonics; Africa; Middle East; Maps

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These regions are covered at the regional scale 1/5000.000. The data sets have been collected in a GIS based information system. GIS is not only a new efficient mapping tool as layers of data bases (geographic, topographic, geophysics) are easily added to process the "raw maps". However, constructing a tectonic map cannot be considered as the simple result of adding layers of base related "tectonic informations", conceptual backgrounds about what are the solid earth deformation systems are required. The Northern Africa and Middle East encompasses the main types of plate boundary processes: passive rifted margins, active subduction and continent-continent collision. Among the many tectonic expressions related to the geodynamic framework of the Tethyan orogen, the structures related to the foreland of an orogen will be presented. The structural pattern and timing of the "thinning", "splitting" of the Panafrican orogen, the Caledonian-Variscan imprint and the subsequent involvement into the Tethyan impingement will be considered. The "blind" structures related to the early stages of the Tethyan oceans closure. Aspects of the "distal" effects of the alpine foreland propagation over the newly emerging African and Arabian plate and related "sub-plates" will be discussed in the course of the map presentation. presentation.

165-4 Invited Pubellier, Manuel

GEODYNAMIC-TERRANE MAP OF ASIA: TOWARD A NEW STYLE

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Keywords: Geodynamic; Asia; Terrane; GIS; crustal growth
To exemplify at world scale the processes of crustal growth, we revisited the
strategy for constructing a new style of structural map for very large
continent-sized areas. The geodynamic map of Asia at such a scale (from
eastern Europe to the SE Asia) constitutes on this respect a valuable playground
for this exercise. The Asian continent has grown from a Siberian nucleus by
successive accretions of continental blocks of various size. These blocks
originated from the rifted Gondwana at several stages of the Paleozoic were
successively amalgamated to the growing northern continent from the Devonian
to the Tertiary. On the other hand, our understanding of the processes of
terrane-docking during the blocking of subduction at the active margins has
improved considerably in the recent years and has changed the way information
is reported on geophysical and geological documents for regions where these
phenomena are active. We attempt an evolutive digital geodynamic map on
which we emphasize on the accretionary evolution of the Asian continent during
phanerozoic times, meanwhile we keep tectonic information concerning
deformation, time (orogenic cycles) on the geological terranes. The map is
entirely re-designed using thematic queries on the geological databases
available, digitized geological and tectonic maps. The information is compiled in
a robust GIS and transformed into a single projection system with identical
geodetic parameters. For each tectonic belt, geological information serves as a
background for redrafting the terranes (e.g. volcanic arc, back-arc basins,
accretionary wedges, basins, shelves...). In most cases the original graphic
information is far to accurate and as to be degraded or generalized according to
the considered scale. Differences of knowledge in ancient and recent belts result
in increasing accuracy for the geological plae on a active tectonic environment.
The objects present on the map

165-5 Oral Sato, Tadashi

BIRD'S EYE VIEWS ACROSS THE CONVERGENT BOUNDARIES - DIGITAL TECTONIC MAP OF THE CCOP COUNTRIES

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Keywords: Bird's-eye-views; Tectonic Map; CCOP Countries; GIS; Asia
A new type of digital tectonic map of the CCOP countries was compiled and
published using a GIS software, TNTmips®. Data are written mostly in vector
format, which allows all possible zooming-in and out without decline of quality.
The map constitutes of multiple layer(s) each of which holds a single set of
tectonic attributes. Any combination of layer(s) of the selcted area is possible so
that readers can select the necessary attributes and show them on screen in any
desired size. Unlike the conventional tectonic maps, this map is designed to
show on the map itself all necessary tectonic information such as age of the map
unit (by color of background), its tectonic nature (basement, orogenic,
reactivated and cover)(by pattern), age of tectonic events (by color of pattern),
composition of constituent rocks (by symbols), distribution of epicenters, active
volcanoes, etc. Readers can quickly seize the tectonic history of the area of
concern, without referring to the explanatory notes. Moreover, a small balloon
showing a summary of attributes (data tips), which appears on screen when the
cursor is placed on a spot for a few seconds, helps the reader to know what is
the pointed map element. The use of GIS software allows us to make the
bird's-eye views of any area, 3-D topography overlain by the tectonic maps. The
bird's-eye views can be made from any direction with any angle of perspective.
To illustrate, a few series of bird's-eye views along the sections of tectonic
interest were prepared. These give vivid images of geology of the section, as if
flying over the transect of tectonic importance. It visually shows the relation
between topography and geologic structure, and produces an insight of the
tectonic development of the section to the readers. Examples are taken in the
tectonic development of the section to the readers. Examples are taken in the
tectonic development of the section to the readers. Keywords: Bird's-eye-views; Tectonic Map; CCOP Countries; GIS; Asia

165-6 Invited Zappettini, Eduardo Osvaldo

THE DIGITAL METALLOGENIC MAP OF SOUTH AMERICA

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Keywords: Metallogeny; South America; SIG

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After 20 years of the first published Metallogenic Map of South America, a new
version has been prepared under the auspices of the Commission for the
Geological Map of the World (CGMW) and the Iberoamerican Association of
Geological and Mining Surveys. It was built by the Geological Surveys of the
involved countries under the general coordination of the Geological and Mining
Survey of Argentina (SEGEMAR). The map was prepared at 1:5.000.000 scale; it
covers an area of 18 million square kilometres and includes information of about
1,500 metallic and industrial mineral deposits. The most important mineral
deposits are depicted, including information about their essential characteristics

within their tectonostratigraphic context. The description of each tectonostratigraphic unit includes: formal units involved, lithology, structure, age and genetically related deposits (including name, location, morphology, resources and grades, mineralogy and genesis). Mineral deposits classification considers: genesis (symbol shape) paragenetic associations/commodities (symbol colour) and size (following the international classification used in other international metallogenic maps). A comprehensive mineral deposit database, using the World Minerals Geoscience Database Project structure is included in the digital version. The map was generated with a GIS from the Geological Map of South America, updating the geology. Also the geological polygons were reclassified and aggregated in order to define tectonostratigraphic and metallogenic units. The mineral deposits symbols have been specially created since their complexity do not allow the use of the available tools of the commercial GISs. For this purpose, dictionaries of data and look up tables for paragenetic associations/commodities, deposit model classification and sizes were created. Their link with the mineral deposit database allowed obtaining all possible combinations in order to produce an index and then the specific symbology. The methodology adopted was a fast, consistent and functional way to displayed in a WEB site in order to facilitate the data dissemination of the created map. Its digital format and WEB disposal ensure an easy way to update the information and make it accessible to users.

165-7 Invited Pei, Rongfu

1:10000000 PRECAMBRIAN METALLOGENIC ZONING MAP OF CHINA (PMZC)

PEI Rongfu¹, XIONG Qunyao¹ 1 - Institute of Mineral Resources, Chinese Academy of Geological Sciences Keywords: Precambrian; Metallogenic zoning; map of China

Keywords: Precambrian; Metallogenic zoning; map of China PMZC (10M) belongs to separate sheet of World Atlas of Precambrian Metallogenic Zoning (WAPMZ). The tectonic units of PMZC mainly was Chinese platform including Talimu-Chaidamu craton in western part, China-Korea craton in eastern part, Yangzi craton and Huaxia craton in southern part and Qinling fold belt in middle part. The lithological associations of Chinese platform, there are granulite-gneiss, granite-greenstone, volcano-clastic rock, volcano-sedimentary rock, anorogenic volcanoplutonic rock, clasolite-carbonate and black shale. Magmatisum including 5 period: Qiangxi in paleo mid-Archean (>2.9-Ga), Fuping-Mutal in new Archean (>2.9-2.5Ga), Lullang in paleo proterozic (>2.5-1.8Ga), Sibao in mid-proterozic (>1.8-1.0Ga) and Jinning-Sinian in new proterozic (>1.0-0.6Ga). Based on 250 representative mineral deposits from databank of Precambrian and regional dynamic thermal metamorphic processes, we have divided 36 metallogenic zone of Precambrian, which belongs to 3 temporal and 5 concentration period and prefer to occur in continental margin and extension trend are controlled by EW and near EW. The PMZC was compiled by Chinese developed MAPCAD computer soft and completed by ARC/INFO.

165-8 Invited Scandone, Paolo

GEOLOGICAL MAPS OF THE FUTURE. THE EXAMPLE OF THE STRUCTURAL MODEL OF ITALY

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Keywords: geological-maps-of-the-future; geodatabase; Structural-Model-of-Italy

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GIS have a strong impact on Earth Sciences, in particular on 2D and 3D geological maps. The rapid evolution of the digital technology with more and more sophisticated programs is a permanent stimulus to improve imaging. However, this fact implies three risks:- Management of geological objects may become a complex toy, property of a few initiated, usually out of geology;- The toy may become a slot machine that repays with a few smart products high operating costs;- The quality of the geological database may become a scond-order article with respect to the imaging.Earth Sciences are entering a post-paper map era, but the results will strongly depend on the choise of the data-processing systems and on the ability to organize rational and self-consistent geodatabases. We present an example of regional cartography in which inhomogeneous objects (e.g., geological/Structural maps, seismic lines, well logs)have been organized in a homogeneous database. The software we used is represented by commercial programs running on PC. Great effort has been devoted to the formalization of the geological data into logic categories organized in homogeneous groups occupying equivalent positions in a hierarchic tree. For example, in the digital Structural Model of Italy the Alps occupy an intermediate position between more comprehensive categories (e.g. Europe-verging Orogenic System) and more specific categories ranging from groups of nappes (e.g. Autroalpine System) to single nappes (e.g. Margna Nappe) the composition of which is described in the last level of the hierarchic tree. A complete description of first-order geological objects occupies up to nine hierarchic levels. The advantages of a hierarchic organization of the data set are quite obvious. This organization obliges geologists to define for every object its information content, obliges to compare the object with the other objects present in the data bank and finally obliges to store it into

165-9 Oral Grikurov, Garrik

GEOLOGIC AND TECTONIC IMAGING OF ANTARCTICA: PAST ACHIEVEMENTS AND PLANS FOR THE FUTURE

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Keywords: Tectonics; Antarctica; Mapping; Database

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First speculative cartographic generalizations of geologic and tectonic structure
of Antarctica appeared almost 100 years ago but only in the last decades of the
past century extensive geological and geophysical research on the continent and
in the surrounding seas enabled compilation of more credible cartographic
models. Some of the latter represented the Antarctic components (separate
sheets or insets) of global-wide projects and therefore were constrained by
strongly generalized pre-set legends, while the others addressed only the
Antarctic continent and were based on more specific legends elaborated by
individual research groups. CGMW provided encouragement and guidance to all
these projects, regardless of whether they were formally endorsed by the
Commission or developed as national initiatives. The principal datasets utilized
for overview imaging of the Antarctic structure include: (1) geology and isotope
geochemistry of scarce bedrock outcrop, (ii) topography of sub-ice bedrock