

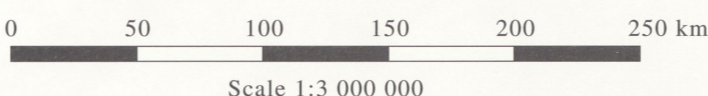
Geological Map of Sweden

Compiled by Michael B. Stephens, Carl-Henric Wahlgren and Pär Weihed

1994

SGU

Geological Survey of Sweden



SWEDISH CALEDONIDES

- Lower Palaeozoic granite, gabbro (in UpA and KNUA)
- Medium- and high-grade metamorphic rocks from exotic continental crust (UpA)
- Lower Palaeozoic volcano-sedimentary rocks and intrusions in oceanic arc-basin systems (KNUA)
- Sedimentary and mafic/ultramafic igneous rocks, outermost Baltica margin (SNUA). E=Eclogite
- Neoproterozoic sedimentary rocks and mafic dykes (ca. 600 Ma), Baltica margin (SNMA)
- Neoproterozoic to Silurian sedimentary rocks, Baltica margin (LA / MA)
- Precambrian crystalline rocks, Baltica margin (LA / MA)

UpA=Uppermost Allochthon, KNUA=Köli Nappes in Upper Allochthon, SNUA=Seve Nappes in Upper Allochthon, SNMA=Särv Nappes in Middle Allochthon, MA=Middle Allochthon and LA=Lower Allochthon

All rocks are affected, at least partly, by deformation and metamorphism in the time-range ca. 510-400 Ma

PHANEROZOIC SEDIMENTARY COVER ROCKS, IGNEOUS ROCKS AND IMPACT STRUCTURES

- Triassic to Tertiary sandstone, siltstone, shale and limestone
- Lower Palaeozoic sandstone, shale and limestone. Permo-Carboniferous dolerite
- Jurassic and Cretaceous basaltic plugs
- Lower Cambrian alkaline igneous complex (Alhöfn)
- Inferred impact structure

FENNOSCANDIAN SHIELD

Neoproterozoic clastic sedimentary rocks

- Sandstone, conglomerate, siltstone and shale (Visingsö Group)

Sveconorwegian orogen

Rocks ca. 1.57-0.90 Ga in age in the Eastern, Median and Western segments

- Neoproterozoic granite, ca. 0.92 Ga
- Mesoproterozoic volcano-sedimentary rocks, ca. 1.22 Ga
- Mesoproterozoic granites and subordinate intermediate to mafic intrusions, ca. 1.56-1.22 Ga
- Mesoproterozoic dolerites, ca. 1.57 Ga

Rocks >ca. 1.56 Ga in the Median and Western segments

- Calc-alkaline granitoids and subordinate mafic intrusions, ca. 1.65-1.59 Ga
- Volcanic rocks, ca. 1.67 and 1.61 Ga
- Greywacke and basalt, ca. 1.76 Ga

Rocks >ca. 1.57 Ga in the Eastern segment

- Orthogneiss of uncertain age and affiliation west of the TIB*
- Granitoids and subordinate mafic intrusions / Felsic to intermediate volcanic rocks, all belonging to TIB* and ca. 1.85-1.65 Ga
- Granite and pegmatite, ca. 1.81-1.75 Ga
- Calc-alkaline granitoids and subordinate mafic intrusions, ca. 1.89-1.85 Ga
- Volcanic rocks, ca. 1.89 Ga
- Sedimentary rocks, ca. 1.89 Ga

All rocks are affected, at least partly, by deformation and metamorphism in the time-range ca. 1.10-0.90 Ga

Anorogenic intrusions and supracrustal rocks

- Mesoproterozoic dolerite sill, ca. 1.25-1.20 Ga
- Mesoproterozoic granite, syenite, gabbro and anorthosite, ca. 1.58-1.40 Ga
- Palaeo- to Mesoproterozoic sandstone, conglomerate, siltstone, shale and basalt, ca. 1.69-1.25 Ga

Svecokarelian orogen

- Granitoids and subordinate mafic intrusions / Felsic to intermediate volcanic rocks, conglomerate and sandstone. TIB* and Revsund-Sorsele suite, ca. 1.85-1.69 Ga
- Granite and pegmatite, ca. 1.82-1.75 Ga
- Granite, monzonite and subordinate mafic intrusions, ca. 1.88-1.86 Ga
- Calc-alkaline granitoids and subordinate mafic intrusions, ca. 1.95-1.85 Ga
- Volcanic rocks, ca. 1.90-1.87 Ga
- Sedimentary rocks, >ca. 1.95-1.87 Ga
- Mafic volcanic rocks, quartzite and graphitic schist, ca. 2.70-2.20 Ga
- Archaean high-grade metamorphic rocks

All rocks are affected, at least partly, by deformation and metamorphism in the time range ca. 1.86-1.40 Ga

DUCTILE STRUCTURES

- Caledonian thrust
- Sveconorwegian deformation zone, strike-slip and reverse displacement
- Sveconorwegian thrust
- Svecokarelian deformation zone, strike-slip and north-side-down displacement
- Svecokarelian deformation zone with strike-slip displacement
- Deformation zone, kinematics unspecified
- Form lines of tectonic foliation in the Fennoscandian Shield

Arrows indicate sense of strike-slip displacement

FAULTS

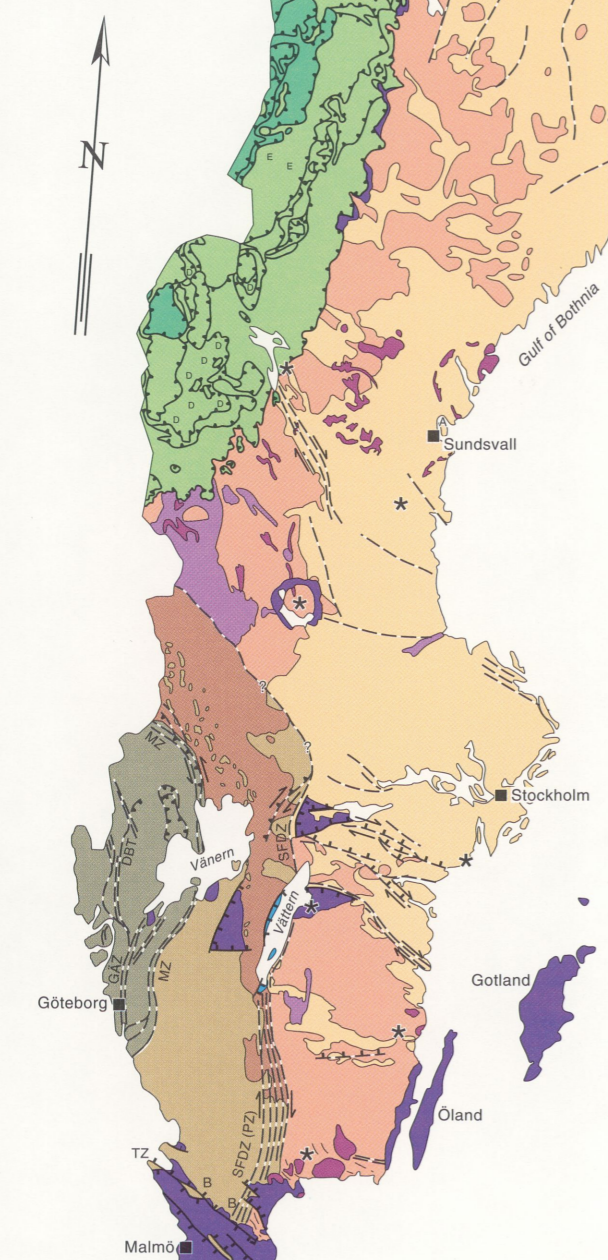
- Normal fault

TIB*=Transscandinavian Igneous Belt

1 Ma=1 million years, 1 Ga=1000 million years

Major Tectonic Units in the Bedrock of Sweden

Scale 1:7 000 000



SWEDISH CALEDONIDES (latest ductile deformation ca. 510-400 Ma)

- Outboard terranes
- Tectonically shortened margin of the continent Baltica. E=Eclogite, D=Dolerite

PHANEROZOIC SEDIMENTARY COVER ROCKS, IGNEOUS ROCKS AND IMPACT STRUCTURES

- Phanerozoic sedimentary cover rocks and dolerite
- Jurassic and Cretaceous basaltic plugs
- Lower Cambrian alkaline igneous complex (Alhöfn)
- Inferred impact structure

FENNOSCANDIAN SHIELD

Neoproterozoic clastic sedimentary rocks

- Clastic sedimentary rocks

Sveconorwegian orogen (latest ductile deformation ca. 1.10-0.90 Ga)

- Median and Western segments (including reworked, >ca. 1.56 Ga outboard terranes?)
- Palaeoproterozoic volcanic and intrusive rocks belonging to TIB* in Eastern segment
- Eastern segment excluding TIB*

Anorogenic intrusions and supracrustal rocks

- Mesoproterozoic intrusive rocks
- Palaeo- to Mesoproterozoic clastic sedimentary rocks and basalt

Svecokarelian orogen (latest ductile deformation post-ca. 1.80 Ga in northern Sweden, in the time range ca. 1.78-1.56 Ga in south-central Sweden, and ca. 1.77-1.40 Ga in southeastermost Sweden)

- Meta-TIB* rocks (?) affected by pervasive deformation in southeastermost Sweden
- Palaeoproterozoic volcanic and intrusive rocks belonging to TIB* and Revsund-Sorsele suite
- Palaeoproterozoic rocks excluding TIB* and Revsund-Sorsele suite
- Archaean rocks

DUCTILE DEFORMATION ZONES

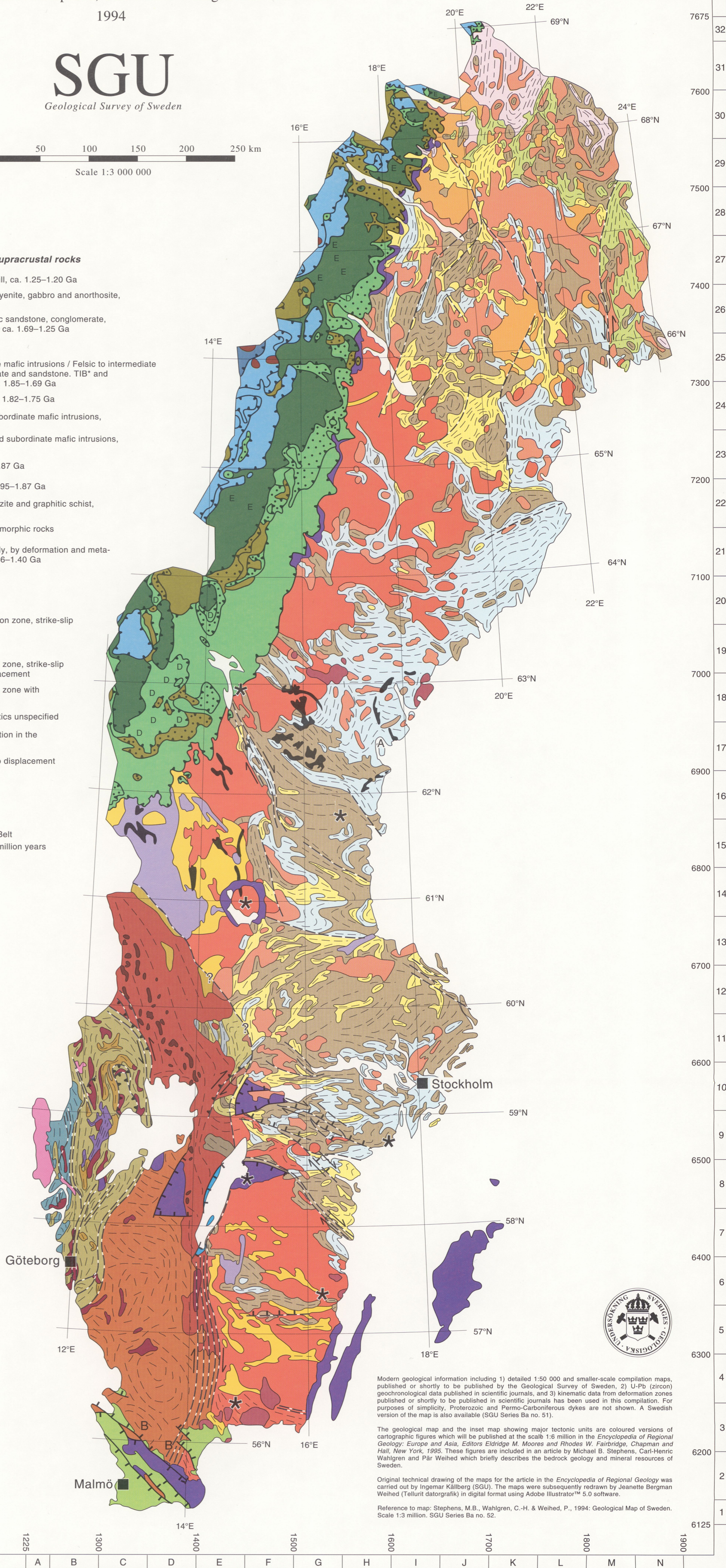
- Caledonian thrust
- Sveconorwegian deformation zone, strike-slip and reverse displacement
- Sveconorwegian thrust
- Svecokarelian deformation zone, strike-slip and north-side-down displacement
- Svecokarelian deformation zone with strike-slip displacement
- Deformation zone, kinematics unspecified

Arrows indicate sense of strike-slip displacement. In the Sveconorwegian orogen, SFZD (PZ)=Sveconorwegian Frontal Deformation Zone, in part equivalent to the so-called Protogine Zone, MZ=Mylonite Zone, GAZ=Göta Älv Zone and DBT=Dalstrand Boundary Thrust

FAULTS

- Normal fault
- TZ=Tornquist Zone

TIB*=Transscandinavian Igneous Belt
1 Ma=1 million years, 1 Ga=1000 million years



Modern geological information including 1) detailed 1:50 000 and smaller-scale compilation maps, published or shortly to be published by the Geological Survey of Sweden, 2) U-Pb (zircon) geochronological data published in scientific journals, and 3) kinematic data from deformation zones published or shortly to be published in scientific journals has been used in this compilation. For purposes of simplicity, Proterozoic and Permo-Carboniferous dykes are not shown. A Swedish version of the map is also available (SGU Series Ba no. 51).

The geological map and the inset map showing major tectonic units are coloured versions of cartographic figures which will be published at the scale 1:6 million in the *Encyclopedia of Regional Geology: Europe and Asia*, Editors Eldridge M. Moores and Rhodes W. Fairbridge, Chapman and Hall, New York, 1995. These figures are included in an article by Michael B. Stephens, Carl-Henric Wahlgren and Pär Weihed which briefly describes the bedrock geology and mineral resources of Sweden.

Original technical drawing of the maps for the article in the *Encyclopedia of Regional Geology: Europe and Asia*, Editors Eldridge M. Moores and Rhodes W. Fairbridge, Chapman and Hall, New York, 1995. The maps were subsequently redrawn by Jeanette Bergman Weihed (Tellurite datorgrafik) in digital format using Adobe Illustrator™ 5.0 software.

Reference to map: Stephens, M.B., Wahlgren, C.-H. & Weihed, P., 1994: Geological Map of Sweden. Scale 1:3 million. SGU Series Ba no. 52.