Geology of the Iešjav'ri - Skoganvarre area, Northern Finnmarksvidda, North Norway

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The Iešjav'ri - Skoganvarre area is located in the northern part of Finnmarksvidda and is underlain by Archaean - Early Proterozoic rocks. The oldest unit, the Jer'gul Gneiss Complex, is unconformably overlain by metasediments and metavolcanites assigned to the Vuomegielas, Skuvvanvarri and Suoluvuobmi Formations. The Iddjajav'ri Group, thrust upon the above-mentioned rock units, completes the Early Proterozoic rock succession.

The Čaddjejåkka unconformity, the Stallučåk'ka Thrust and the Stabbursdalen - Iešjav'ri Fault Zone are important geological features of the area. Correlation between the formations exposed on either side of the fault is proposed. The gneissic rocks of the area have undergone periods of deformation, emplacement of plutons and uplift prior to accumulation of the supracrustal sequences. Subsequently, the Svecokarelian orogeny resulted in folding and westward thrusting of rock units comprising the gneiss complex and the supracrustal formations. A period of erosion which lasted about 1000 million years then followed and this was succeeded by a Late Precambrian transgression and the deposition of sediments of the Dividal Group.

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Introduction

The Iešjav'ri - Skoganvarre area as described in this paper forms a 10 - 20 km wide belt extending from the 24°E meridian, west of Iešjav'ri, c. 50 km northeastwards to the 25°E meridian at Skoganvarre (Figs. 1 & 2). The principal rock units in the area are the Jer'gul Gneiss Complex, the volcano-sedimentary sequences of the Kautokeino and Karasjok Greenstone Belts, all Early Precambrian, and the Late Precambrian - Cambrian Dividal Group. In the northernmost part of the area these rocks are overthrust by the Caledonian nappes. This paper is concerned with the rock units older than the Dividal Group and deals primarily with the supracrustal rocks.

The present investigation was concentrated in the Iešjav'ri - Skoganvarre area for two main reasons:

1. The area was shown on earlier maps (Skålvoll 1972, 1978) as consisting of meta-arenites and mica schists in contact with the Jer'gul Gneiss Complex to the south. An analysis of these sedimentary sequences, in particular of the sandstone-dominated lithofacies, and the outlining of a facies model were the first objectives of this work.
2. The area is located between, and at the northern junction of two NNW-SSE-trending greenstone belts, the Kautokeino Greenstone Belt and the Karasjok Greenstone Belt (Fig. 1, see also Siedlecka et al. this volume). The Kautokeino Greenstone Belt is wider in its northern part, where it also bends towards the northeast (Holmsen et al. 1957, Skålvoll 1978, Zwaan 1985). On the contrary, the northern part of the Karasjok Greenstone Belt swings towards the northwest (Skålvoll 1972) (Fig. 1). This structural pattern suggests that the greenstone belts meet in the Iešjav'ri - Skoganvarre area at the northern periphery of the Jer'gul Gneiss Complex. The mapping of this area thus offered a possibility for clarifying the relationship between these two greenstone belts.

This paper is a modified version of my talk given at the Finnmark Meeting in March 1983 (Siedlecka 1984), now concentrating primarily on the history of development of the studied area and on correlation with neighbouring parts of Finnmarksvidda. Sedimentological aspects are treated briefly and only to the extent which is necessary for an interpretation of the geological history of the Iešjav'ri - Skoganvarre area. An outline of the general lithostratigraphy and correlation of the rock units of Finnmarksvidda is presented elsewhere in this volume (Siedlecka et al. 1985).

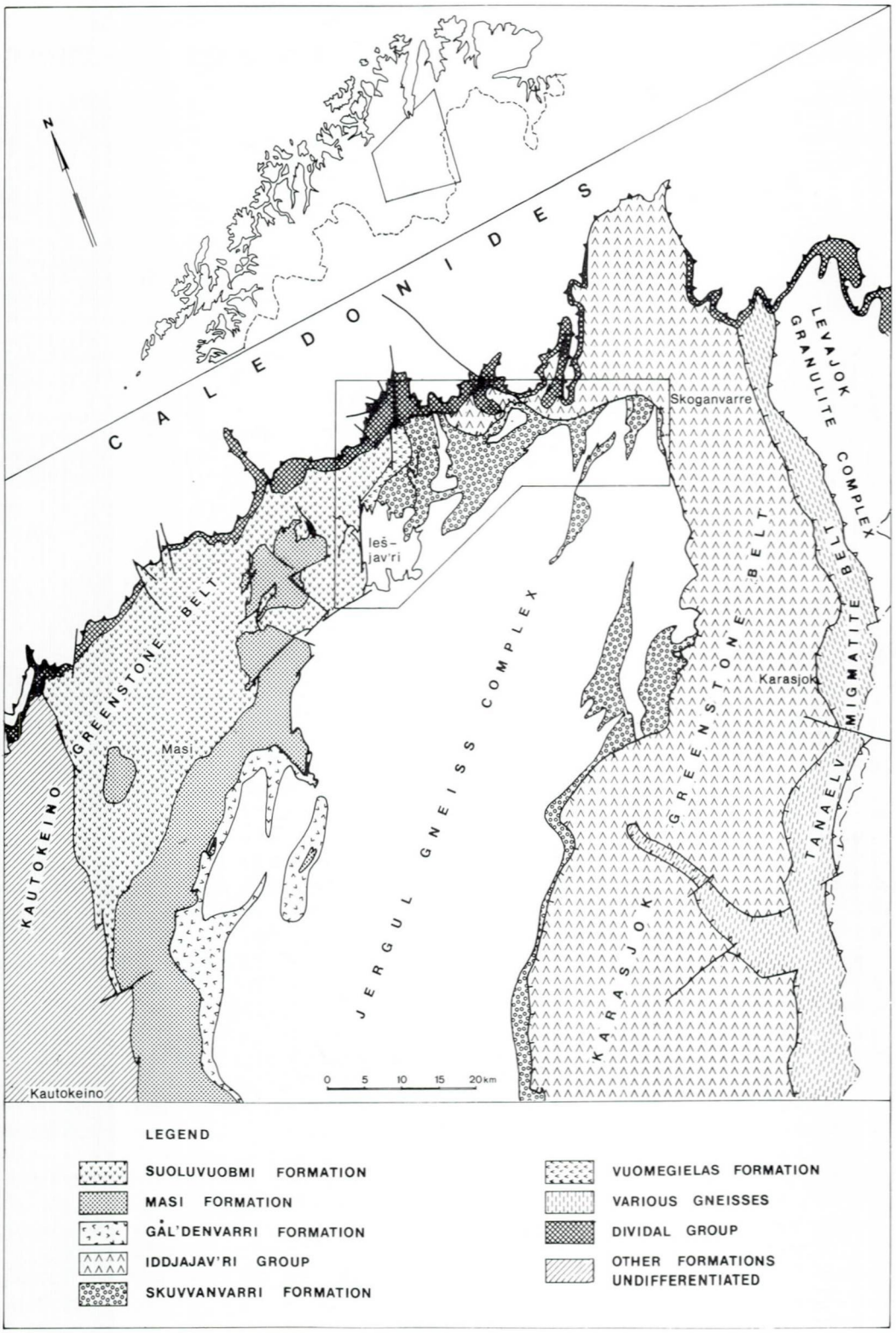

Fig. 1. Simplified geological map of Finnmarksvidda. Iešjav'ri - Skoganvarre area framed.

Tectonostratigraphy

Introduction

The Jer'gul Gneiss Complex and the overlying volcano-sedimentary rock assemblages of the Kautokeino and Karasjok Greenstone Belts constitute the main geological units of Finnmarksvidda. They were formed during Archaean - Early Proterozoic time, folded during the Svecokarelian orogeny and deeply eroded prior to deposition of the Late Precambrian Dividal Group (Figs. 1 & 2). In the Iešjav'ri - Skoganvarre area the supracrustal rocks, originally terrigenous sediments and basaltic lavas, now quartzites, conglomerates, schists and amphibolites, are represented by (1) the volcanic Vuomegielas Formation, (2) terrigenous Skuvvanvarri Formation, (3) volcano-sedimentary Suoluvuobmi Formation and (4) the volcano-sedimentary Iddjajav'ri Group (Fig. 2). The relationships between these rock units, including the basal unconformity, are described and discussed below.

Čaddjejåkka Unconformity

In the early sixties Skålvoll (1964) discovered an *angular unconformity* in the Skoganvarre area between a granitic gneiss and a conglomerate consisting of pebbles of granitic gneiss. Exposures of the unconformity are located in the Čadjejåkka river gully, south of the settlement of Skoganvarre (Fig. 2). Skålvoll (1964) pointed out the stratigraphic importance of this *Čadjejåkka Unconformity*. I have followed the unconformity westwards to a point c. 2 km east of Iešjav'ri. Although there are few good exposures of the unconformity, it is exposed beneath thin weathering products in several places and constitutes an excellent mapping horizon. It has also been encountered in the Karasjok area (M. Often, unpublished data) and is undoubtedly an extensive interface important for stratigraphy and correlation.

The substratum of the conglomerate belongs to the Jer'gul Gneiss Complex (see Siedlecka et al. 1985, this volume) and in the present area consists of two main rock types. The first is represented by grey, strongly deformed and migmatized, banded and often hornblende-bearing gneisses. The second is a foliated rock of granitic - tonalitic composition, much more homogeneous and most probably intruded into the gneisses. This latter type crops out as several, separate bodies (Fig. 2). The granitic gneiss described by Skålvoll (1964) as the substratum to the conglomerate in the Čaddjejåkka gully seems to represent one of them. This particular body appears to be more strongly foliated than those farther to the west, perhaps because of its proximity to a thrust zone, shown in Fig. 2 and discussed later in this paper. This Čadjegor'ži granite yielded a Rb-Sr errorchron age of 2110 ± 105 Ma, and this date is confidently interpreted by Krill et al. (1985, this volume) as the age

Fig. 3. Čaddjejåkka Unconformity in the type locality. The contact surface between the gneiss and the conglomerate is marked by the arrow.

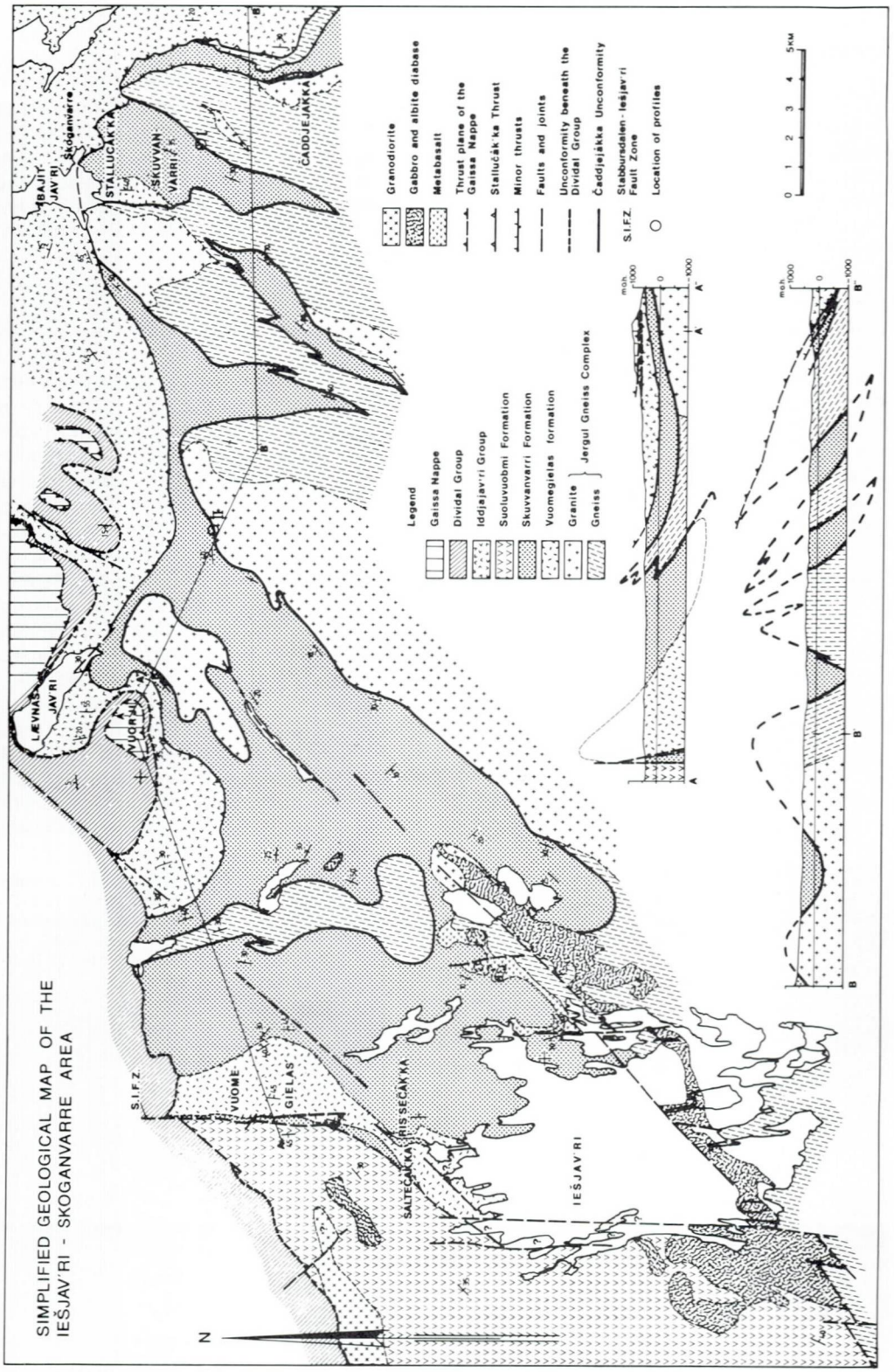

Fig. 2. Simplified geological map of the Iešjav'ri - Skoganvarre area.

of crystallization of the tonalite. This interpretation suggests that the Jer'gul Gneiss Complex comprises not only Archaean gneisses, as suggested by the older age determinations at around 2800 Ma (Skålvoll 1972), but also Early Proterozoic rocks. The unconformity is of Early Proterozoic age and does not mark the Archaean - Proterozoic boundary as earlier age determinations might have suggested (Skålvoll 1972). Further age determinations are needed in order to support this conclusion and to clarify whether or not any Svecokarelian age resetting could have taken place.

At the type locality, the unconformity is characterized by a sharp uneven surface of fresh granitic gneiss (foliated granite) overlain by very coarse conglomerate (Fig. 3). Two other profiles studied in some detail show that the upper part of the substratum (0.2 m to several metres in thickness) is strongly altered into a carbonate-rich rock (Fig. 4). In both cases the substratum is depleted in SiO_2 (in profile II also in Al_2O_3) at the expense of MgO and CaO, with the formation of mainly carbonate minerals. There is an increase in K_2O and Fe_2O_3 content and decrease in the amount of Na_2O. This trend is not unlike that observed in Precambrian regoliths formed under oxidizing conditions (e.g. Gay & Grandstaff 1980, Retallack et al. 1984). The enrichment in K_2O and decrease in Na_2O may possibly reflect fixation of potassium in clay and destruction of Na-feldspar and removal of sodium, respectively. The carbonatization shows parallels with that observed on the Canadian Shield and interpreted either as dolomitization of a regolith beneath a sabkha-type carbonate platform (Chown & Caty 1983) or as paleocaliche (Kalliokoski 1975). There are no carbonate deposits above the Čadjejåkka Unconformity and therefore an interpretation of the enrichment in carbonates as a possible formation of caliche is more probable. The unconformity is overlain by fine-grained matrix-supported conglomerate in profile I and by sandstone in profile II.

Wherever observed, the Čaddjejåkka Unconformity is overlain by terrigenous rocks of the Skuvvanvarri Formation as described later in this paper. In parts of the area, however, this formation appears to rest on metamorphosed volcanic rocks of the Vuomegielas Formation.

Vuomegielas Formation and its relationship to adjacent rock units.

The formation occurs north of Iešjav'ri where the type area is located (Fig. 2). It is lithologically fairly homogeneous, consisting of dark-green to dark-grey finely-crystalline foliated amphibolites and some hornblende schists. The formation is interpreted as volcanic and, is described in Siedlecka (1985).

The rocks of the Vuomegielas Formation dip beneath the terrigenous Skuvvanvarri Formation (Fig. 2). Nowhere has the actual contact between these two formations been observed; nor have any up/down criteria been found. The stratigraphic relationship is therefore uncertain and the proposed interpretation is based on the following indirect evidence: Mapping northeast of Iešjav'ri suggests that the Skuvvanvarri Formation forms a gentle, SW-NE-elongated syncline. Outcrops of the Jer'gul Gneiss Complex constitute windows within this structure, and the N-S-trending gneiss ridge subdivides the syncline into western and eastern parts (Fig. 2). In the western part dips are consistently eastwards suggesting that the Vuomegielas amphibolites underlie the Skuvvanvarri Formation in normal stratigraphic position.

The lower boundary of the formation is nowhere exposed. The nature of the upper boundary may be studied in a section between Sal'tečåk'ka and Ris'sečåk'ka, c. 1 km north of Iesjav'ri (Fig. 2). Over a distance of about 700 m there occur scattered outcrops of conglomerate, quartzite, hornblende schist and finely crystalline amphibolite. All these rocks show a N-S to NE-SW strike, and dip rather gently east-southeastwards. Lack of any pervasive tectonic deformation suggests primary alternation of the sedimentary and volcanic rocks rather than tectonic repetition. I therefore conclude that in the area north of Iešjav'ri there is an interdigitation between the Voumegielas and Skuvvanvarri Formations. The transitional zone between these formations is some 250 - 300 m thick.

Immediately west of Skuvvanvarri (Fig. 2) there are amphibolites between the gneisses and the Skuvvanvarri Formation (with no exposure of the actual contacts). Some of the amphibolites exhibit high MgO (c. 18 %) and low TiO_2 (1 %) contents, resembling komatiites. These amphibolites are also tentatively assigned to the Vuomegielas Formation because of their stratigraphic position and lithology.

Skuvvanvarri Formation

The Skuvvanvarri Formation is an entirely metasedimentary sequence consisting mainly of

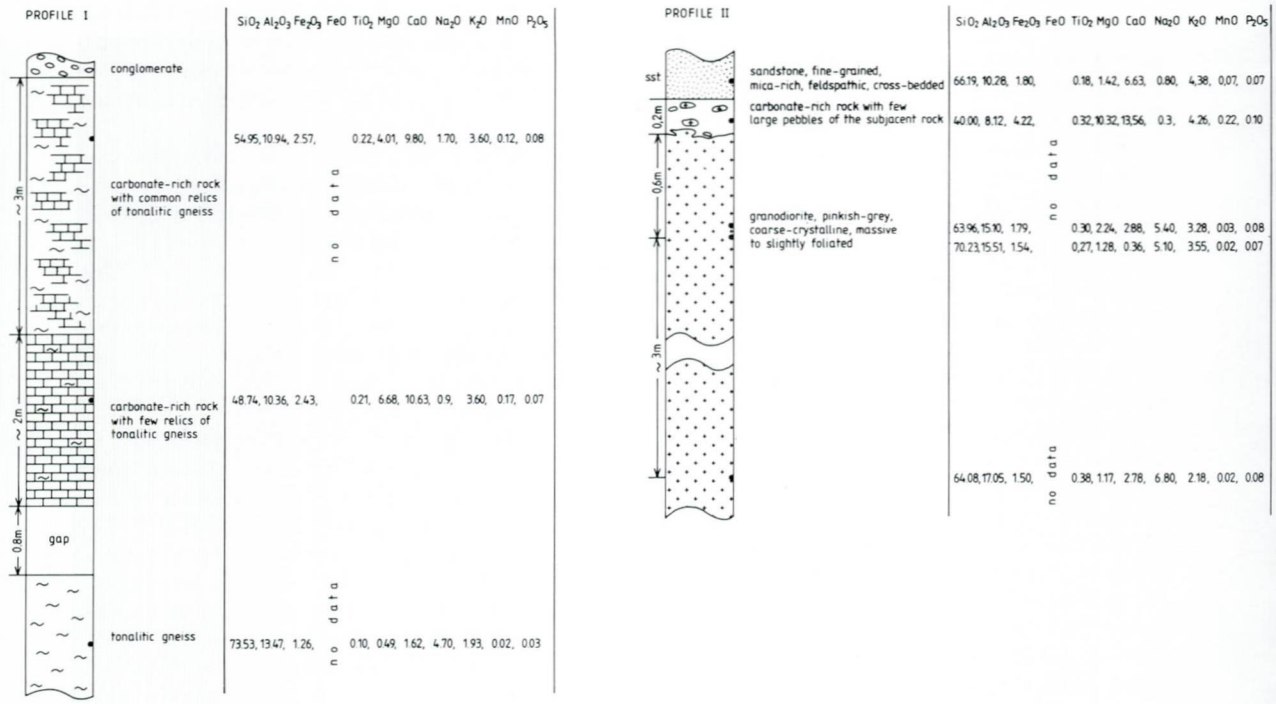

Fig. 4. Profiles across the contact between the Jer'gul Gneiss Complex and the Skuvvanvarri Formation. Profile I is located in the southeastern part of the hill Skuvvanvarri and profile II about halfway between Skuvvanvarri and Vuor'ji (see Fig. 2).

light-grey, pink or green conglomerates, sandstones and mudrocks. In the Iešjav'ri - Skoganvarre area, the thickness is estimated to vary between 750 and 950 m.

The conglomerate is mostly matrix-supported, very coarse- to fine-grained, poorly sorted and polymict in composition, containing fragments mainly of granitic rocks, gneisses, quartzites, mica schists and quartz. The composition of clasts varies laterally (Siedlecka 1984, and unpublished results). The matrix consists of micas, finely-crystalline quartz, some feldspar and a varying amount of carbonate. The conglomerate forms thick to very thick beds which typically lack any internal water-flow structures. The mudrocks are similar in texture and composition to the matrix in the conglomerates and may contain scattered pebbles. The conglomerates are interpreted as debris-flow and sheetflood deposits accumulated on alluvial fans (Siedlecka 1984).

The sandstones are pink, green (fuchsite-stained) or white; they are thick-bedded, medium- to fine-grained and well-sorted, contrasting in their high textural maturity with the conglomerates. They exhibit in some localities large-scale cross-bedding of either tangential or tabular, herring-bone type. On the basis of mineralogical composition the sandstones may be subdivided into feldspathic sandstones and quartzites. Some of the feldspathic sandstones contain mainly albite, and this rather unusual variety has been interpreted as possibly deriving from albite-rich volcanites (Siedlecka 1984). The sandstones could have originated in a variety of environments ranging from fluvial channel to coastal deposits, both water-transported and eolian (mature quartzites).

Variations in lithofacies distribution are typical of the Skuvvanvarri Formation. Conglomerates predominate on Skuvvanvarri mountain and decrease westwards, being successively replaced by mudrocks and interbedded with sandstones. This suggests that alluvial gravels, muds and sands were accumulated on the paleocontinent in the east, and toward the west were gradually interbedded with and partly reworked into coastal sands.

Stallučåk'ka Thrust

The Skuvvanvarri and Voumegielas Formations are infolded into the Jer'gul Gneiss Complex, and overturned folds with axial planes dipping steeply towards east-southeast are particularly prominent in the eastern part of the area (Fig. 2). Cleavage in the metasediments parallels this trend. Deformation is most pervasive in the easternmost part of the area, east of the Čaddjejåkka river, where there is an upward repetition of metasediments and gneisses containing mylonites. To the east this tectonically disturbed zone is roofed by amphibolites, schists and quartzites of the Iddjajav'ri Group. This latter volcano-sedimentary sequence bends westwards, and south of Bajitjav'ri the north-dipping foliation of these rocks truncates the steep foliation of the Skuvvanvarri metasediments. These observations suggest that the Iddjajav'ri Group has been thrust upon the Jer'gul Gneiss Complex - Skuvvanvarri Formation; and this has been confirmed by detailed structural investigations carried out by Pharaoh (1984a) who mapped out a c. 400m-thick zone of gneiss- and metasediment-derived mylonite comprising at least two couplets of 'basement and cover', and he also demonstrated that on Stallucåk'ka the thrust has removed all but a few metres of mylonite. This *Stallucåk'ka Thrust,* according to Pharaoh (1984a) who also coined the name, is best exposed on the southern side of the hill Stallucåk'ka. He concluded that "there is a clear discordance in terms of tectonic complexity and metamorphic grade between the greenstone facies sediments of the Skoganvarre formation (renamed to Skuvvanvarri Formation, Siedlecka et al. 1985, this volume) below the thrust and the amphibolite facies supracrustal lithologies which overlie it at this locality". (Pharaoh 1984a, p. 10).

Amphibolites, metagabbros and mica schists of the Iddjajav'ri Group continue from Stallučåk'ka westwards to the Lævnašjav'ri - Vuor'ji area, where they disappear beneath the Dividal Group (Fig. 2). While the thrust is not exposed over this distance of some 20 km, the discordance in the structural trend has been clearly revealed by mapping. A poorly exposed mylonite zone, interpreted as marking the continuation of the Stallučåk'ka Thrust, has been recorded on the eastern slopes of Vuor'ji. The westernmost extension of the Stallučåk'ka Thrust is not clear. Quartzite and marble with tremolite--rosettes outcropping some 6 km west of the summit of Vuor'ji have tentatively been assigned to the Iddjajav'ri Group mainly because an association of quartzites, mica schists and marbles occur in this group in the Lakselv valley (Pharaoh 1981, 1984b) (Fig. 2).

Stabbursdalen - Iešjav'ri Fault Zone

Zwaan & Roberts (1978) have observed on satellite photos a N-S lineament trending along the Øvre Stabbursdalen valley and interpreted it as a probable continuation of a strike-slip fault affecting the Caledonian nappes. I have mapped the area close to the southern prolongation of the lineament and confirmed its interpretation as a fault (Fig. 2). It is traceable to a point c. 4-5 km north of Iešjav'ri where a new NE-SW-trending lineament appears continuing towards the northwestern corner of Iešjav'ri. Aeromagnetic data confirm the interpretation of the lineaments as faults (O. Olesen, unpubl. data). The same geophysical data show that a major N-S dislocation parallels the western shores of Iešjav'ri and continues southwards into the Jer'gul Complex (Olesen, unpubl. data). A combined geological and geophysical approach shows that these faults are a part of a system of N-S and NE-SW-trending fractures and dislocations widespread on Finnmarksvidda (Olesen & Solli 1985, this volume).

Exposure along the northern, N-S-oriented segment of the *Stabbursdalen - Iešjav'ri Fault Zone* is fairly good showing N-S striking and mostly close to vertical rocks of the Skuvvanvarri Formation (Fig. 2). West of the faulted area the volcano-sedimentary Suoluvuobmi Formation (see description below) is exposed, while the terrain east of it is underlain by amphibolites assigned to the Vuomegielas Formation (Fig. 2). Exposures along the NE-SW-trending segment of the Stabbursdalen Iešjav'ri Fault Zone show the same distribution of rocks, while further south, west of the lake, there are outcrops of rocks of the Suoluvuobmi Formation, and the Skuvvanvarri and Voumegielas Formations are absent. The precise nature of the fault zone is difficult to establish. It seems to be a zone of nearly vertical fractures and, as suggested in the next chapter, the most reasonable interpretation is that the rocks west of the zone have been downthrown. Some strike-slip movement may also be involved, however, although this has not been detected in the investigated area. The abo-

ve-mentioned N-S and NE-SW fault and joint complex to which the Stabbursdalen - Iešjav'ri Fault Zone belongs seems to have resulted from an extensional stress where components of both normal dip-slip and strike-slip were involved. The sense of movement in the Stabbursdalen - Iešjav'ri Fault Zone may perhaps best be understood in this context.

Suoluvuobmi and Masi Formations: their relationship and substratum.

The area west and northwest of the lake is composed of a heterogeneous sequence of amphibolites, hornblende schists and hornblende-biotite schists containing abundant calcium-rich scapolite. Amphibolites, thought to be metamorphosed basalts, contain subordinate bands of an amphibole-chlorite rock interpreted as altered ultramafic lava. Beds of black graphitic schist and light-coloured quartz-albite felsite occur in minor amounts. The sequence continues to the west and southwest, where it has previously been mapped and described by Solli (1983) and Zwaan (1985), and named the Suoluvuobmi Formation by Solli (1983).

In the Masi area, in spite of tectonic deformation which obliterates stratigraphic relationships, the Suoluvuobmi Formation appears to rest upon the Masi Formation with a normal stratigraphic contact (Solli 1983). The precise nature of the contact, however, is not known but north of the Masi area Zwaan (1985) has mapped the Masi- Suoluvuobmi boundary as an sedimentary interfingering of both formations. This indicates a continuity in accumulation of the volcano-sedimentary sequence, which on lithologic grounds is assigned to the Masi and Suoluvuobmi formations. The Masi Formation (Solli 1983, Siedlecka et al., this volume) is entirely terrigenous and its most characteristic rock is a white, pink or green (fuchsite-stained) feldspathic sandstone. The sandstone is mostly quartz-cemented and recrystallized into (feldspathic) quartzite. The formation, formerly designated in the geological literature as the 'Masi Quartzite', rests either on gneiss or on the Gål'denvarri Formation, in both cases with an angular unconformity (Solli 1984).

Discussion and correlation

In an attempt at interpreting the above-described facts I will first discuss the development of the Iešjav'ri - Skoganvarre area east of the Iešjav'ri - Stabbursdalen Fault Zone and then the correlation across it.

The Čaddjejåkka Unconformity constitutes undoubtedly the most important feature of the geological record of the area. Prior to the uplift and erosion which preceded deposition of conglomerates of the Skuvvanvarri Formation the rocks of the Jer'gul Gneiss Complex suffered polyphase deformation involving metamorphism and migmatization under upper amphibolite facies conditions (Pharaoh 1984a). It is tempting to consider the subjacent Jer'gul Complex as the main source area for the clasts of granitic rocks and gneisses common in the Skuvvanvarri conglomerates. However, the conglomerates are thickest and most extensive in the eastern part of the described area, being gradually replaced westwards by finer and more mature sediments. South of Skoganvarre, along the western margin of the Karasjok Greenstone Belt, the conglomerates are thin and subordinate to quartzites. This suggests the location of an elevated source area northeast of Skoganvarre. The possibility of the existence of such a granitic area is supported by the presence of a granite overlain by conglomerate and sandstone in the lower part of the allochthonous Iddjajav'ri Group in the Lakselv valley, north of the Skoganvarre area (cf. Pharaoh 1984b). It is therefore proposed that, although the Jer'gul Complex probably contributed to the formation of the conglomerates, another mountainous terrain to the northeast was probably the provenance terrain for the bulk of the alluvial gravels.

The conglomerates of the Skuvvanvarri Formation do not contain clasts which may be referred to the Voumegielas Formation, except for a few pebbles possibly representing weathered volcanic rocks. This may partly be explained by (1) the proposed northeasterly location of the (main) source area, (2) the subordinate extension of the Voumegielas Formation and its location in topographic lows in the rifts, and (3) the fairly rapid weathering of basic volcanites which altered into a clay which is included in the matrix of the conglomerates. Supposedly for the same reasons the conglomerates of the Masi Formation of the Kautokeino Greenstone Belt do not contain clasts of the volcanic rocks of the subjacent Gåi'denvarri Formation. Only at one locality near the base have clasts of basic volcanites been observed (Solli 1983). Another similar example is provided by the Čaravarri Formation of the Kautokeino Greenstone Belt. The formation is enclosed by (older) volcanic

formations and consists of alluvial conglomerates and sandstones clearly derived from the erosion of a granitic source or sources with no sign of volcanic particles.

The Rb-Sr age (Krill et al., 1985, this volume) mentioned above suggests that the Čaddjejåkka Unconformity does not mark the Archean-Proterozoic boundary. This time boundary was crossed sometime during the formation of the Jer'gul Gneiss Complex and is probably not marked by a physical, mappable interface. The cited date suggests that the Čaddjejåkka Unconformity marks an intra-Early Proterozoic hiatus of considerable duration. More radiometric dating is needed to confirm the Early Proterozoic age of the unconformity and to estimate how long the hiatus lasted and when it started and ended.

Over most of the area the Jer'gul Gneiss Complex is overlain unconformably by the Skuvvanvarri Formation. In some places the Skuvvanvarri Formation rests on volcanic rocks of the Vuomegielas Formation and this contact is interpreted in the type area as a primary interfingering of volcanic products and terrigenous sediments. The contact between the gneisses of the Jer'gul Gneiss Complex *and* the volcanites is nowhere exposed. It is assumed that the Čaddjejåkka Unconformity continues beneath the volcanic rocks. This assumption would further suggest that after the long-lasting period of erosion which affected the sialic crust and brought the Jer'gul Gneiss Complex to the surface, there occurred a (?)local episode of rifting of the crust and extrusion of basalts.

Sedimentary facies development and facies distribution show that at least part of the denuded area had a considerable topographic relief upon which alluvial fans accumulated (see above and Siedlecka 1984). On the other hand, prolonged erosion, such as that suggested by the Čaddjejåkka Unconformity, usually results in the formation of a peneplain where coarse, immature, alluvial accumulations are generally absent. Rifting of a peneplain, however, as assumed in connection with the basaltic extrusions, would tend to produce a fault-bounded, horst-and-graben rejuvenated relief. Degradation of this landscape would assist in producing gravel (like that of the conglomerates of the Skuvvanvarri Formation) and accumulate it at the foot of the elevated terrain.

The basement (Jer'gul Gneiss Complex) and cover (Vuomegielas and Skuvvanvarri Formations) were subsequently folded and eroded. The increasing degree of deformation towards the east, the orientation of the axial planes of the folds and the westward thrusting in the easternmost part of the area all indicate a crustal shortening due to compressive stress from the east. The westward-directed translation is also evident from minor fold structures and lineations (Pharaoh 1984a). This deformation pattern is a distal effect of the westward emplacement of the Lapland Granulite Complex, traditionally thought as being the main manifestation of the Early Proterozoic Svecokarelian orogeny in northern Scandinavia (e.g. Simonen 1980, Gaal 1982, Krill 1985, this volume).

In the Iešjav'ri - Skoganvarre area the inferred minimum translation of the Iddjajav'ri Group of the Karasjok Greenstone Belt along the Stallucåk'ka Thrust is in the order of 35 km (Pharaoh 1984, had suggested about 50 km). The westward continuation of the edge of the Stallucåk'ka Thrust (Fig. 2) is thought to be an effect of erosion related to a later updoming of the Jer'gul Gneiss Complex rather than a major change in Svecokarelian structural trend.

The Early Proterozoic Svecokarelian deformation at about 1900 Ma. was followed by a new extensive period of erosion of the area which lasted to c. 650 M.a. The duration of the erosional/nondepositional hiatus was thus more than 1000 Ma. (Siedlecka 1985). The sedimentation of the Upper Proterozoic - Cambrian Dividal Group, separated from its Lower Proterozoic - Archaean substratum by the unconformity, terminates the Proterozoic history of the area.

West of the Iešjav'ri-Stabbursdalen Fault Zone, basement - cover relationships are less clear. The contact between the volcanic Gåldenvarri Formation and its *original* substratum is uncertain, being intruded by younger granites (Solli 1983). Unlike the Vuomegielas - Skuvvanvarri depositional continuity, the Gål'denvarri and Masi Formations are separated by a period of deformation and erosion. This makes a direct correlation between these two pairs of units impossible. A tentative correlation has to involve a restricted hiatus in time and space, whose unconformity correlates with the conformable contact outside the hiatus; this is a feature common to younger formations where time--stratigraphic control is better than in Precambrian time.

Lithological similarity, particularly between the Masi and Skuvvanvarri Formations, makes correlation between at least these two units fea-

sible. Direct equivalents of the Suoluvuobmi Formation are not known east of the fault zone. If correlation between the Masi and Skuvvanvarri Formations is correct, the importance of the Stabbursdalen - Iešjav'ri Fault Zone is diminished. Though vertical displacement along this fault zone may reach several hundreds of metres, the fault does not constitute any major boundary between the Kautokeino and the Karasjok Greenstone Belts. The recently obtained Rb-Sr date of 2105 ± 77 Ma. on komatiites of the Karasjok Greenstone Belt suggests an Early Proterozoic age for the origin of the supracrustal sequence of this belt. The Kautokeino Greenstone Belt was traditionally correlated with the Early Proterozoic Kiruna-Vittangi greenstones. It thus seems that the belts are probably of similar age and may be looked upon as a result of volcanism and sedimentation active in various parts of a craton in response to formation of their respective structural basins. The stratigraphic relationship between the autochthonous supracrustals and the overthrusted rocks as observed in the described area is uncertain and cannot be deduced from the evidence from the Iešjav'ri - Skoganvarre area alone. Broader aspects of these suggested correlations are discussed elsewhere (Siedlecka et al. 1985, this volume).

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