associates of the British merchants also
made a lot of money. But this money
went into buying zamindaris and urban
properties, and thus became a dead end.
In a similar fashion, the SW export
earnings are not going into anything
progressive; they are simply being frit-
ttered away.
India has raised large chunks of loans
domestically and internationally. The
only way to pay back these loans is to
produce wealth vigorously and quickly.
The only way to produce wealth is to
employ qualified technical people in the
task. If these people are placed at the
disposal of the industrialized countries
at rock-bottom rates in extraneous jobs,
who and what would give India
strength? It needs to be better known
that as far as the unspecified 'non-
software electronic exports' are
concerned, there was an actual decline of
more than 8% in 1997–98 from the
previous year, even though the SW ex-
ports went up 50%.
There cannot be any objection to
India's providing competitive, soiled-
collar services to the rest of the world.
The trend in fact needs to be encour-
gaged. Globalization, however, does not
mean perpetual sunshine in the west and
perpetual sunset in India. Globalization
means that similarly qualified people
anywhere in the world should be more
or less similarly employed. Let India's
well-regarded manpower take up jobs
consistent with its intellect and training.
Let the service sector in India flourish
on discounted payments but let it not
suck in India's trained scientific and
technical manpower.
(An earlier version was presented at
the UGC-sponsored Seminar on Distur-
bting Trends in Science Education, Ban-
galore, 18 February 1999).

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SCIENTIFIC CORRESPONDENCE

Gravity image of India

Regional gravity anomaly maps provide
valuable information on the subsurface
density distribution, major tectonic and
structural lineaments, geodynamic as-
pects of a plate margin, and structure of
the crust and lithosphere, etc. Several
papers1–3 appeared in literature showing
the utility of gravity anomaly map of
India4 in geological interpretations.
Significance of gravity field in under-
standing the seismicity and tectonics of
the Indian peninsula and the Himalayas5
and the geodynamic aspects of the
Indian plate6 are also reported. More
recently, the importance of gravity
anomalies in deciphering the layering of
the earth's crust and upper mantle be-
low India7 is highlighted. Study of
gravity trends8 and synthesis of regional
gravity data with available magnetic and
seismic information8 has been done to
identify structural provinces7 and to
prepare the tectonic map of the Indian
sub-continent8.

An image of the gravity data digitized
earlier8 is presented in this paper. The
purpose is to show the efficacy of geo-
physical images in displaying the fea-
tures that cannot be seen readily in a
contour map. The colour shaded image
of Bouguer gravity anomalies over India
is prepared using the GEOSOFT image
processing software with both the azi-
muth and elevation of the sun equal to
45°. However, the commonly available
SURFER software or advanced level
graphics packages can also be used to
create such images. While the basic
features of such images would be simi-
lar, the application of different graphics
packages will normally result in images
of different qualities. The image in Fig-
ure 1 can be directly correlated with
some of the most prominent geological
features of India9. For example, the
Narmada–Son lineament, Godavari and
Mahanadi rifts, Aravallis trend and the
Eastern Ghats, etc. can be identified by
the gravity highs shown by red to yel-
low colours. The Saurashtra and west
Rajasthan block as well as the Shilong
plateau are also characterized by high
gravity values. Around Mathura (south
of Delhi) a gravity high that extends in
NE direction as a ridge towards lower
Himalayas also appears prominently. A
more detailed examination of the map
will help to recognize the Cuddapah
basin, Vindhyans, and Chattisgarh and
Indravati basins—all of them associated
with gravity lows shown by green to
blue colours.

The features described above provide
an obvious correlation with the known
geology. A number of interesting fea-
tures, not reflected in the geological
map9, can be seen in the Dharwar cra-
ton. First of all, the Deccan traps, de-
spite being the single largest unit in the
geological map of India, do not appear
in the gravity image. According to this
image map it could be surmised that the
Dharwar craton extends northwards up
to Tapti river while on the eastern side
it is bounded by the Godavari rift. In
the northern part of the Dharwar craton
there are two strong NW–SE trending
parallel gravity high features that run
from the western coast to the western
margin of the Cuddapah basin. These
features might be associated with the
rift valleys beneath the Deccan traps
reported earlier10. Gravity values asso-
ciated with the trend located in the
south also divide the Dharwar craton
into northern and southern parts clearly.
In the south Dharwar craton, the
Clospet granite and the arcuate schist
belts in the western part can be identi-
fied easily. While the gravity values
over the Dharwar craton and the sou-
thern granulite terrain show similar
magnitudes, a careful examination of
the trends clearly shows that the two are
separated by the distinct signature of
Falghat–Cauvery shear zone.

Among other interesting features, one
could recognize two parallel ENE–
WSW trends north of Narmada–Son

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lineament possibly suggesting the extension of Bundelkhand craton below the alluvials in ENE direction. The NW-SE trends in the northern Dharwar craton, nearly E-W trend of the Narmada–Son lineament, NE-SW trend of the Aravallis, almost N-S trend of the gravity high associated with the west Rajasthan block, and the north-western trend in north-eastern Gujarat, seem to ‘radiate’ from a region close to the gulf of Cambay. While the aim of this paper is only to emphasize the significance of a geophysical image map, it is worth mentioning that the mega radiating pat-
tern could possibly be used to explain the source for large-scale Deccan volcanism, separation of India from Africa, bolide impact, or plume activity, etc.

4. NGRI, Bouguer Gravity Anomaly Map of India (1:5000 000) NGRI/GPH-2, 1975.
8. GEOSOFT-Gravity and magnetic data processing and imaging software, Toronto, Canada.

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Poaching, STF-activity and forest loss

Factors driving the forest cover change have become major issues of concern in our attempts to understand the patterns of loss in biodiversity. Occasionally unexpected factors such as certain local-specific social and/or cultural elements are shown to play a very significant role in bringing about the forest cover change. These changes can be quite unobvious and contrary to expectations. We report here one such change in the forest cover in Tamil Nadu that seems to be associated with the increased human activity in the forest. Our purpose is merely to draw attention to an unexpected pattern associated with a specific human activity and not to implicate any specific causal factor.

Poaching is unanimously recognized as one of the important factors for forest loss. In Tamil Nadu (and Karnataka), the Dharmpuri, Periyar, Salem districts and their adjoining areas (Nilgiri and Coimbatore) are well known for the active presence of the notorious poacher Veerappan, and the Special Task Force (STF) has been active in and around these areas almost for the past eight years. Consequently, either because of a mass psycho built-up around these areas or due to severe restrictions laid by the STF for entering them, these forest divisions seem to have received a special protection leading to a significant improvement in the health of the forests. We found that during 1989–1995, when Veerappan's activity came to be highly publicized and the STF was pressed to action, there has been a general improvement in the health of the forest compared to other areas that are free from these factors. The per cent forest under dense cover\(^1\) (\(> 40\%\) forest cover) increased by 6.36 \(\pm\) 1.60 while that under open forest (\(< 40\%\) forest

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\(^1\) Dense cover refers to forest with a canopy cover greater than 40%.