THE TURBIDITY MAXIMUM
IN THE NORTHERN PART OF HO BUGT

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Ho Bugt contains in its northernmost part a turbidity maximum. Its extension, textural composition, and concentration levels have been investigated and the share of fluvial-suspended material estimated. Finally, the different concentration processes are discussed, and it is suggested which of them are the most active in the maintenance of the turbidity maximum.

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HYDROGRAPHY AND BOTTOM TOPOGRAPHY

As shown in fig. 1 the tidal channel Hjerting Løb splits up into a flood channel and an ebb channel N of Sjelborg. When following the latter, this is seen to divide again a few km to the W; the western branch is ending up blind in the NW-part of the bay, whereas the eastern branch continues in a N-direction up to the mouth of the river Varde Å, cf. length profile in fig. 2. Fig. 3 shows a cross profile of the two channels, and the cross profiles are inserted on fig. 1. On the length profile a high-lying area is seen about 1 km from the river mouth, this is a bar formation that stops the river flow. It is built up mainly of bottom-transported material from the river. The eastern channel is approximately 700 m wide and 2.5 m deep at high tide (HT), while the western is about 100 wide and 3.5 m deep at HT. A weak levée formation can be distinguished along the transition from channel to waddens.

Hydrographically, the western channel transports about 30% more water during flood than during ebb, while the eastern channel transports about 20% more water during ebb than during flood. The freshwater from Varde Å discharges primarily into the eastern channel, but even after subtraction of this mass of water it can be stated that there is a clockwise rotating net current in the northern part of the bay.

In the western channel the mean current velocity is approximately 0.45 m/sec., in the eastern channel about 0.40 m/sec. both during ebb and flood periods. There is a weak trend, however, of higher maximum velocities during flood periods due to the asymmetrical tidal wave. The maximum velocities are reached just before low tide (LT) in the ebb period and just after LT in the flood period at rather shallow depths.

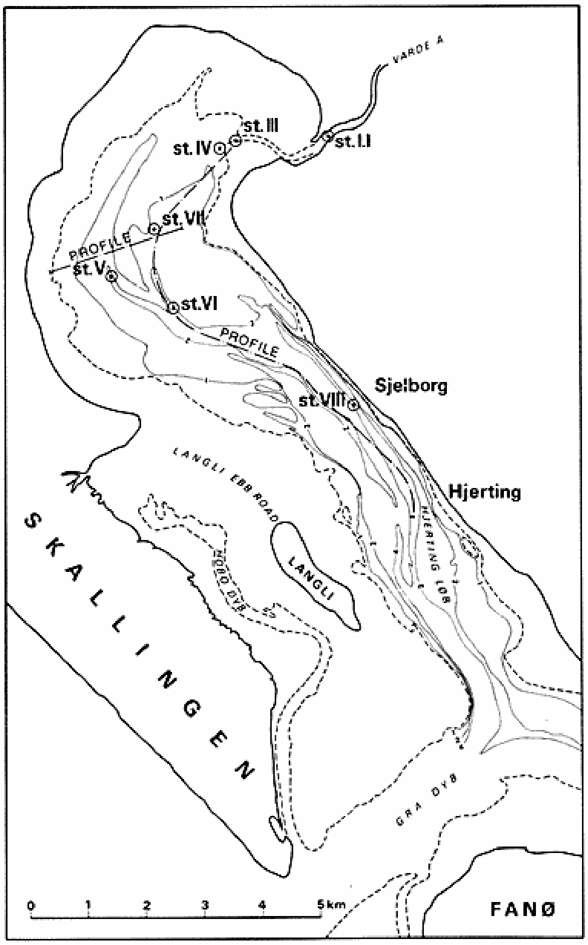

Fig. 1. Sea chart of Ho Bay showing the bottom topography and location of measuring stations and profiles.
Fig. 1. Søkort over Ho Bugt. Bundtopografi og beliggenheden af målestationer og profiler.

It should finally be mentioned that the two channels together transport about 40% of the tidal prism up-estuary as well during ebb as during flood. The remaining 60% of the tidal prism is transported across the waddens.

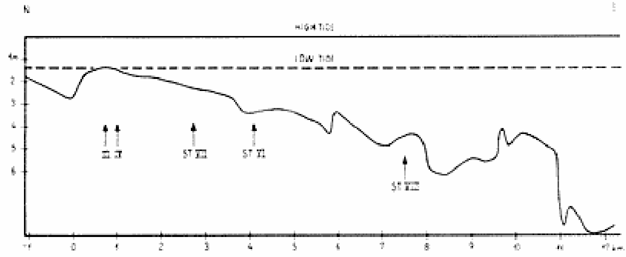

Fig. 2. Length profile of the eastern channel. For location see fig. 1.
Fig. 2. Længdeprofil af det østlige løb. Beliggenhed fremgår af fig. 1.

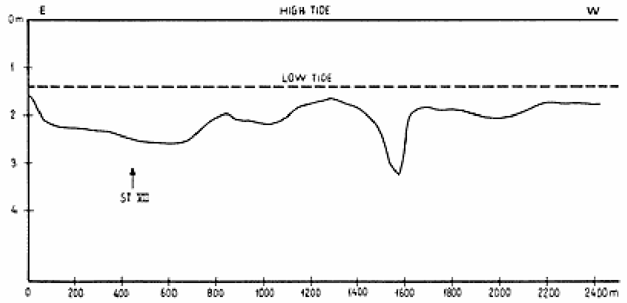

Fig. 3. Cross profile of the eastern and western channel in the northern part of Ho Bay. For location, cf. fig. 1.
fig. 3. Tværprofil af det østlige og vestlige løb i Ho Bugts nordlige del, jvfr. fig. 1.

DESCRIPTION OF THE TURBIDITY MAXIMUM

In the northern part of the bay there is a zone with high concentrations of suspended material, a so-called turbidity maximum. Due to the wind-generated wave turbulence combined with the constantly changing strength of the tidal current, the concentrations of suspended material vary greatly within the single tidal periods, but also from day to day. Around stations III, and IV (for location see fig. 1) a typical concentration will be about 50 mg/l at HT. At ebb, however, concentrations of 200-300 mg/l are common, and the highest measured, depth-integrated concentrations of suspended material lie in the order of 1000 mg/l.

Sedimentation analyses of newly deposited material show that this is very fine-grained. The analyses were made as a combination of pipette analyses of particles from 63-2 μ and centrifugal analyses from 3-0.2 μ. In this way the mean grain size of formerly suspended material was determined to 1.3 μ. Coulter Counter analyses of water samples showed a mean grain size of about 8 μ for the fraction of suspended material $> 2\ \mu$. The two analysing methods were made comparable by truncating the distribution from the sedimentation analysis at 2 μ; this gave a mean grain size of the fraction $> 2\ \mu$ of approximately 11 μ. The values so determined by sedimentation analyses were a little higher than those determined by the Coulter Counter analysis, which is in accordance with results described by E. W. Beherens (1978). It can therefore be concluded that the mean grain size of the suspended material is 1-2 μ. The Coulter Counter analyses further showed that the fraction $> 2\ \mu$ had an increasing mean grain size with increasing concentration of suspended material.

As mentioned, the turbidity maximum is only found in the northernmost part of the bay, but measurements have shown that it extends over the whole width of the bay. In order to determine its southern extension during ebb, depth-integrated water samples were taken from Hjerting and 1.1 km upstream the river mouth in the time around low tide slack water (LTSW). Moreover, in same places the salinity was measured at different depths for drawing isohalines on the length profile of the eastern channel, cf. fig. 4. As LT is travelling rather slowly up through the bay from S to N, it was possible to follow the LTSW while collecting water samples from Hjerting to Varde Å. Fig 4 shows the situation along the eastern channels at LTSW.

As appears from fig. 4, the concentrations of suspended material at LTSW 8/7-1978 had two maxima, one approximately 800 m from the river mouth down-estuary and another one roughly 3 km down-estuary. The concentration of the first maximum was measured to be about 400 mg/l, but was of a temporary character only as it owed its existence to wave turbulence in the shallows around the bar

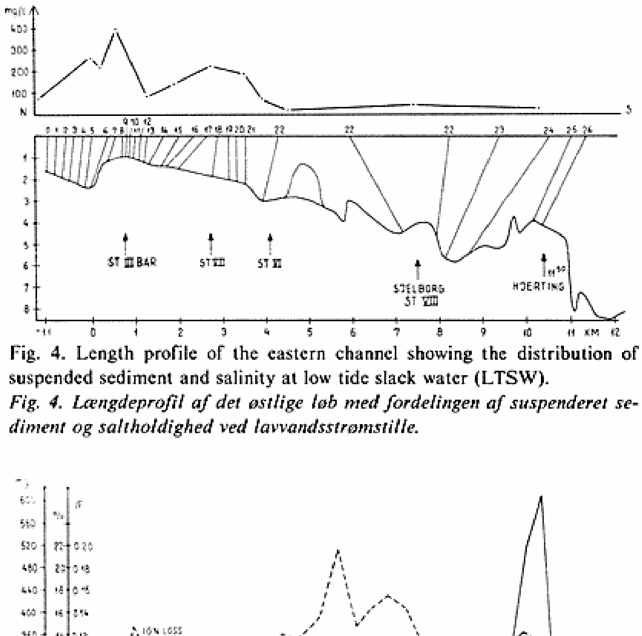

Fig. 4. Length profile of the eastern channel showing the distribution of suspended sediment and salinity at low tide slack water (LTSW).
Fig. 4. Længdeprofil af det østlige løb med fordelingen af suspenderet sediment og saltholdighed ved lavvandsstrømstille.

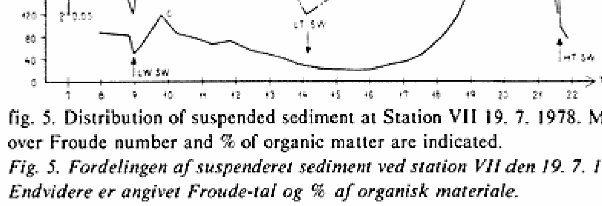

fig. 5. Distribution of suspended sediment at Station VII 19. 7. 1978. Moreover Froude number and % of organic matter are indicated.
Fig. 5. Fordelingen af suspenderet sediment ved station VII den 19. 7. 1978. Endvidere er angivet Froude-tal og % af organisk materiale.

during the last few hours of the ebb period. The other maximum demonstrates how far southward in the bay the highly sediment-loaded water will reach during the ebb period, i.e. about 4 km; it further appears that the salinity ranges from 13-22 ‰ and that the width of the maximum is 3.2 km. This is in agreement with the variations in concentration of suspended material and salinity measured at station VII 19/7-1978, see fig. 5; this shows a peak on the curve of concentrated suspended material. It takes about 3½ hour for the peak to pass the station and as the mean velocity in this space of time is about 0.25/sec. the horizontal extension of the top is about 3.2 km. At station VII the salinity varies from 21 to 12 ‰ from 19h to 21h, which is almost identical with the values found along the eastern channel at LTSW; thus, it is evident that it is the same turbidity maximum that has been described in two different ways. Moreover, figs. 4 and 5 show that the sedimentation is very rapid in the minutes just before LTSW. Finally, there is a minor top on the concentration curve showing that a certain resuspension takes place about 1 hour after LTSW when the bed shear stress exceeds a critical value which has been determined to be about 0.2 N/m^2.

Measurements of the absolute quantities of suspended material show that during a tidal period there is an outgoing transport through the eastern channel and an ingoing transport through the western channel. Most of the material leaving the area through the eastern channel will be transported back again, across the waddens, with the flood current, this being a little stronger than the ebb current because of the asymmetry of the tidal wave. Moreover, material will be supplied to the area through the western channel; there is thus a dynamic balance in quantity of suspended material in the northern part of the bay. At the same time a sedimentation is taking place on waddens and on the surrounding saltmarshes, so there must be a constant supply of material to maintain the very high concentrations of suspended material in the water in the northern part of the bay. This very high concentration level has been stable through the last 40 years, at least (H. Gry, 1942).

Sources supplying material to the turbidity maximum

There are four possible sources:

1 - fine-grained, fluvial material from Varde Å
2 - marine material
3 - locally eroded material
4 - biological material, organic and inorganic, produced within the estuary.

It is difficult to determine the ratio at which each of the above sources are supplying material to the turbidity maximum. In the case of Ho Bugt, however, it is in fact possible to determine roughly the share of fluvial material in the suspended matter because this is contaminated by mercury adhering to the silt and clay particles in suspension. The mercury comes from a factory which through a 30-year period has been leading polluted waste water out into the Varde Å. Because the bottom sediments originate from the turbidity maximum's suspended particles it is possible to estimate the ratio of fine-grained material of fluvial origin in the turbidity maximum.

The Hg-concentration of the fluvial-suspended material has been known through a 5-year period, from 1973-1977. (B. Hasholt and K. Pedersen, 1977), and also the Hg-contamination of the upper few centimetres of the bottom sediment in the bay has been measured. Investigations have shown (K. Pedersen and B. Larsen, 1977) that Hg primarily adhers to particles $< 2\ \mu$, and the textural composition of the suspended fluvial material has been given by J. Bartholdy (1979). If, additionally, the following assumptions are made, the amount of fluvial material in the turbidity maximum can be estimated:

1. The Hg adhering to the fine-grained particles will not be released when these move from the freshwater environment to the estuarine environment.
2. The Hg in the northern part of Ho Bugt comes primarily from Varde Å.
3. The »natural« concentration of Hg in the bottom sediment is low compared with that found in the sediment today.
4. Hg adhers to organic matter in a similar way as to inorganic matter.

As already mentioned, also the concentrations of Hg in bottom sediment and in fluvial-suspended sediments are known. It is considered justified to use a Hg concentration of fluvial-suspended sediment from the period 1973 to 1977 for an estimation when this value is compared with the Hg concentration of the upper few centimetres of bottom sediments deposited within the last few years. Below an example for estimating the fluvial share of the turbidity maximum:

1. Hg concentration of fluvial-suspended sediment is 9 ppm Hg/g dry weight (dw).
2. 60% of it are $< 2\ \mu$.
3. The fluvial clay has a Hg concentration of 15 ppm Hg/g dw, if Hg adhers to particles $< 2\ \mu$ only.
4. The Hg concentration in bottom sediments in the northern part of the bay is 2 ppm Hg/g dw when converted to the fraction $< 2\ \mu$.
5. The percentage of fluvial clay in the clay of the bottom sediment is: $2/15 \cdot 100\% = 13.3\%$.

With the additional assumption that the clay percentage is representative for the fine fraction as a whole - this being less than 63 μ - it shows that about 13% of the particles suspended in the turbidity maximum is of fluvial origin. The assumption is justified because the fine fraction is in a flocculated state in the water; this appears from its almost homogene textural composition in the bottom sediment brought about by the flocs' random composition of all particles joining the flocculation, as also demonstrated by laboratory experiments.

The remaining 87% of the material in the turbidity maximum should then be of marine origin. How much of it originates from local erosion in the boundering areas and how much from primary production in the estuary is still an unsolved question, however. Map studies show that the saltmarsh areas are not retreating. On the contrary, in the northern part of the bay they are generally growing and thus, erosion of boundering saltmarsh cannot be regarded as a primary sediment source. Neither do the boundering glacial deposits seem to be a possible source, because less than 1% of their grains belong to the fine fraction present in the turbidity maximum.

Results presented by J. Bartholdy (1980) show that organic particles are more easily transported out of the inner estuary than inorganic particles are. A selective transport of this kind has not been observed in the outer estuary, probably because the fluvial material is a small fraction only of the total amount of suspended material transported in the bay. Even if alle the organic material supplied to the bay by Varde Å were transported directly out into the North Sea, this would not affect the above results as long as assumption 4) is valid.

Explanation of the turbidity maximum

The turbidity maximum in the northern part of Ho Bugt was already described by H. Gry (1942), but how it was formed was not explained. Recently the problem has been treated by J. Bartholdy (1979) who advocates that the estuarine circulation see fig. 6 as well as the phenomena: settling-lag and scour-lag are important factors for the formation of the turbidity maximum. Here a more differentiated explanation will be given on the basis of the measurements carried out and theories from literature.

One reason for the existence of the turbidity maximum could be the flocculation of fine-grained material supplied to the bay by Varde Å immediately after its entering the estuarine environment. In literature, there are many descriptions of such maxima where floods enter the sea. R. H. Meade (1972) argues, however, that the existence of such maxima is more due to estuarine circulation than to flocculation. More specifically, as a single factor the flocculation has a dominant effect on the formation of the maximum only when the formed flocs' fall velocities are sufficiently high to make a deposition possible at given depths during ebb. If this condition is not fulfilled, the estuarine circulation will be the dominant factor.

H. Postma (1967) describes how the concentration of fine-grained suspended material in the wadden sea will increase when moving onshore. This phenomenon is due to the following:

1. Moving shoreward, the mean tidal velocity will decrease in a tidal area because of the decreasing tidal prism.
2. After having reached the »sedimentation velocity« a particle in suspension will be transported somewhat farther; moreover, the »erosion velocity« is higher than the »transport velocity«. These two phenomena are called settling-lag and scour-lag.

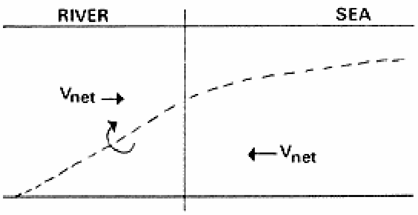

fig. 6. Principle draft of estuarine circulation. There is an ingoing net transport of water along the bottom and an outgoing net transport in the surface layer. Suspended particles moving from upper to lower layer - or vice versa - may be trapped in the circulating water body.

Fig. 6. Principskitse af estuarin cirkulation. Der er en indadrettet netto vandtransport langs bunden og en udadrettet netto transport i overfladen. Suspenderede partikler, der bevæger sig fra øverste til nederste lag - eller omvendt - kan »fanges« i den cirkulerende vandmasse.

The theory has been excellently described by Postma and shall only be summarized here.

Settling-lag gives a particle a net onshore movement because of the distance it is transported during the sedimentation phase. This will cause a particle deposited at HT to be eroded by a more nearshore water mass during ebb and the decreasing tidal velocity from inlet towards the shore will reinforce this. Thus the particle is not carried so far down-estuary as to the place from where it was eroded during flood. Likewise scour-lag causes a particle deposited at HT to be eroded by a more nearshore water mass during ebb becuse the »erosion velocity« is higher than the »transport velocity«, i.e. supports the net onshore movement. The two mechanisms are working simultaneously, and both of them contribute to give a particle a net, onshore movement.

On the basis of measurements in the Dutch wadden sea, Postma concludes that these mechanisms are effective for particles having fall diameters from about 100 μ to at least 8 μ.

APPLICABILITY OF THE THEORIES ON HO BUGT

The northern part of the bay is extremely shallow and allows estuarine circulation only during the first hours after HT; in the southern part of the bay, however, with its higher depths, this circulation is possible. This has been demonstrated by measurements at station VIII at Sjelborg, for location see fig. 1. The cross section at Sjelborg defines Ho Bugt as a type 2a estuary (partially mixed) after the classification system developed by D. V. Hansen and M. Rattray (1965) on the basis of average velocity and -salinity over a cross section during a tidal period. From station VIII and northward, the estuarine circulation is fading out, and at Station VI there is no longer an up-estuary, net transport of water along the bottom. If, therefore, the turbidity maximum owes its existence mainly to the estuarine circulation at Station VIII, the maximum's centre of gravity should lie a little N of the station according to Meade. More specifically, the centre of gravity should be situated near the limit of net onshore flow. This is not the case, however, as demonstrated in fig. 4 which shows the southernmost position of the turbidity maximum; the centre of gravity must consequently be found much longer to the N., and it is thus not likely that the estuarine circulation is the main reason for the concentration of fine-grained suspended material in the turbidity maximum.

As stated before, roughly 13% of the material making up the turbidity maximum is of fluvial origin, so the flocculation of this material immediately after its meeting with the saline water in the bay cannot be the main factor in building up the maximum.

The majority of the suspended particles have, as mentioned, mean grain sizes of about 2 μ. In a flocculated, fine-grained suspension there is the following relation between grain mode and floc mode (K. Kranck, 1975):

(1) $\log(\text{grain mode}) = -0.58 + 1.30 \cdot \log(\text{floc mode})$.

The upper part of the bottom sediment has grain modes for the fine fraction of approximately 25 μ which, according to Kranck, means that the floc mode is about 35 μ. A floc of this size containing 85% water will have a density of 1.25 g/cm^3; which gives it a fall velocity of the same magnitude as a single particle with a diameter of 13 μ and a density of 2.6 g/cm^3. That the suspended sediment is in a flocculated state in the water is, as said before, supported by the fact that the textural composition of the fine fraction of bottom sediment varies very little.

As will appear from the above, the fine-grained suspended material has equivalent fall diameters sufficiently high to make the concentration processes effective, such as described by Postma. Moreover, the mean tidal velocity decreases rapidly from station VIII at Sjelborg to station III at the bar just outside the river mouth. In table 1, the values for different stations in the bay are given:

Table 1.

Station number	$\overline{V}$ m/sec.
VIII	0.76
VI	0.33
VII	0.25

On the basis of the above considerations there seems to be little doubt that it is primarily the processes settling-lag scour-lag that are responsible for the very high concentrations of suspended material in the northern part of Ho Bugt. If working, these processes will supply material mainly of marine origin, which is the case for the Ho Bugt area.

Another phenomenon described by Postma which may reinforce the onshore movement of suspended particles is that the mean depth is higher around LT than around HT, which causes more particles to deposit at HT. Furthermore, the period of low current velocities is much longer at HT than at LT. All this will lead to a shoreward movement of suspended particles in the grain size interval with equivalent fall diameters ranging from 100 μ down to at least 8 μ.

CONCLUSION:

1. The local stream pattern with clockwise rotating net current helps to keep the fine-grained material within the northern part of the bay.
2. The estuarine circulation at St. VIII is not the main reason for the existence of the turbidity maximum.
3. The flocculation as a single factor is not important but plays a part in combination with the lag-processes and the estuarine circulation at St. VIII.
4. Approximately 13% of the fine-grained material is of fluvial origin. The remaining 87% is primarily of marine origin.
5. The processes settling-lag scour-lag can be effective because of the velocity distribution in the Ho Bugt and because of the flocculation of the fine-grained material giving it equivalent fall diameters of about 13 μ.
6. On the basis of 1) to 5) it can be concluded that the turbidity maximum in the northern part of Ho Bugt mainly owes its existence to the processes settling-lag scour-lag as described by Postma.

RESUME

Ho Bugt er den nordligste del af det danske vadehav, mod Ø afgrænset af ældre glaciale aflejringer fra Saale istiden, mod N og V af marskaflejringer. Den vestlige marsk udgøres af halvøen Skallingen, der er vadehavets nordligste barrierø-dannelse. I bugtens SV-del findes klit-marskøen Langli. Bugten er opdelt i to tidevandsområder, hvoraf det ene afgrænses af Skallingen, Langli ebbevej og Langli, medens det andet består af den resterende del af bugten, se fig. 1. I bugtens NØ-hjørne udmunder Varde Å, og overgangen mellem å og bugt markeres af en barre, der er opbygget af bundtransporteret materiale fra åen. På fig. 1 ses, hvordan Hjerting Løb lidt N for Sjelborg splittes op i et flod- og et ebbeskår. Et par km længere mod V opdeles ebbeskåret atter i to løb: et vestligt, der ender blindt i bugtens nordlige del og et østligt, der fører op til Varde Å. Fig. 2 viser et længdeprofil langs det østlige løb, medens fig. 3 viser et tværprofil af de to løb. Strømmålinger på Station V og VII, for beliggenhed se fig. 1, viser, at der eksisterer en med uret rettet nettostrøm i denne del af bugten.

I den N-del af Ho Bugt findes en zone med meget høje koncentrationer af suspenderet materiale, et turbiditetsmaximum. Disse koncentrationer varierer meget såvel gennem de enkelte tidevandsperioder som fra dag til dag. Denne variation skyldes vindgenereret bølgeturbulens og tidevandsstrømmens konstante variation. En typisk koncentration ved højvandstrømstille i området omkring stationerne III og IV er 50 mg/l. I ebbeperioden er koncentrationer på 200-300 mg/l almindelige, og den højeste, målte koncentration ligger på ca. 1000 mg/l. Middelkornstørrelsen af materialet er 1-2 μ bestemt ved sedimentationsanalyse af opkoncentreret suspenderet materiale.

På fig. 4 ses fordelingen af salinitet og indhold af suspenderet materiale langs det østlige løb ved lavvandsstrømstille. Man bemærker, at der er to maxima på kurven. Det nærmest åen skyldes bølgeturbulens i det lavvandede område omkring barren i slutningen af

ebbeperioden. Det andet maximum afspejler, hvor langt mod S det sedimentholdige vand, som findes i bugtens nordlige del i tiden omkring højvande, når i ebbeperioden. Passagen af turbiditetsmaximumet målt på Station VII er vist på fig. 5.

Det materiale, som Varde Å fører ud i Ho Bugt er forurenet med kviksølv. Ved at sammenholde koncentrationen af Hg på de suspenderede fluviale partikler med Hg-koncentrationen i det øverste cm af bundsedimentet i den nordlige del af bugten, er det muligt at estimere, hvor stor en del af turbiditetsmaximumets materiale, der er af fluvial oprindelse. Det viser sig at være ca. 13% af materialet, som stammer fra åen. Den resterende del er primært af marin oprindelse.

Der er en række forskellige processer, der kan medvirke til at koncentrere fint materiale i kystnære områder i et tidevandsmiljø. De vigtigste af disse processer er flokkulering af finkornet materiale, estuarin cirkulationen (se fig. 6), der fanger de suspenderede partikler samt fænomenerne settling-lag scour-lag. Sidstnævnte fænomener er beskrevet af H. Postma (1967). De går i korthed ud på, at partikler mellem ca. 100 μ og 8 μ får en nettobevægelse mod kysten. Dette skyldes aftagende middelhastighed ind mod kysten som følge af det aftagende tidevandsprisme samt, at en suspenderet partikel transporteres et stykke vej under sedimentationsfasen, og at »erosionshastigheden« er større end »transporthastigheden«.

Ved målinger gennem en tidevandsperiode ved Station VIII blev der konstateret en estuarin cirkulation, som aftager mellem Station VIII og VI. Ved at sammenholde denne med turbiditetsmaximumets placering ved lavvande er det fundet, at det ikke kan være den estuarine cirkulation, der er hovedårsag til turbiditetsmaximumets eksistens. Hvis dette var tilfældet skulle maximumets tyngdepunkt være placeret et sted mellem Station VIII og VI, nærmere bestemt nær grænsen for indadrettet netto vandtransport langs bunden. Hastighedsfordelingen i bugten er angivet i tabel 1, og det ses her, hvorledes middelhastigheden aftager, når man bevæger sig fra S mod N. Den ene af betingelserne for at processerne settling-lag scour-lag kan virke er altså til stede. Det er endvidere vist, at det suspenderede sediment optræder i flokkuleret tilstand i vandfasen med ækvivalente falddiametre på ca. 13 μ, hvilket ydermere giver mulighed for at »lag«-processerne kan virke. Disse leverer primært materiale af marin oprindelse, hvis de er virksomme. Da over 80% af materialet, der udgør turbiditetsmaximumet, er af marin oprindelse, kan der på baggrund af ovenstående ikke være tvivl om, at det er processerne: settling-lag scour-lag, der er de vigtigste faktorer for opretholdelsen af turbiditetsmaximumet i den nordlige del af Ho Bugt.

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ebbeperioden. Det andet maximum afspejler, hvor langt mod S det sedimentholdige vand, som findes i bugtens nordlige del i tiden omkring højvande, når i ebbeperioden. Passagen af turbiditetsmaximumet målt på Station VII er vist på fig. 5.

Det materiale, som Varde Å fører ud i Ho Bugt er forurenet med kviksølv. Ved at sammenholde koncentrationen af Hg på de suspenderede fluviale partikler med Hg-koncentrationen i det øverste cm af bundsedimentet i den nordlige del af bugten, er det muligt at estimere, hvor stor en del af turbiditetsmaximumets materiale, der er af fluvial oprindelse. Det viser sig at være ca. 13% af materialet, som stammer fra åen. Den resterende del er primært af marin oprindelse.

Der er en række forskellige processer, der kan medvirke til at koncentrere fint materiale i kystnære områder i et tidevandsmiljø. De vigtigste af disse processer er flokkulering af finkornet materiale, estuarin cirkulationen (se fig. 6), der fanger de suspenderede partikler samt fænomenerne settling-lag scour-lag. Sidstnævnte fænomener er beskrevet af H. Postma (1967). De går i korthed ud på, at partikler mellem ca. 100 μ og 8 μ får en nettobevægelse mod kysten. Dette skyldes aftagende middelhastighed ind mod kysten som følge af det aftagende tidevandsprisme samt, at en suspenderet partikel transporteres et stykke vej under sedimentationsfasen, og at »erosionshastigheden« er større end »transporthastigheden«.

Ved målinger gennem en tidevandsperiode ved Station VIII blev der konstateret en estuarin cirkulation, som aftager mellem Station VIII og VI. Ved at sammenholde denne med turbiditetsmaximumets placering ved lavvande er det fundet, at det ikke kan være den estuarine cirkulation, der er hovedårsag til turbiditetsmaximumets eksistens. Hvis dette var tilfældet skulle maximumets tyngdepunkt være placeret et sted mellem Station VIII og VI, nærmere bestemt nær grænsen for indadrettet netto vandtransport langs bunden. Hastighedsfordelingen i bugten er angivet i tabel 1, og det ses her, hvorledes middelhastigheden aftager, når man bevæger sig fra S mod N. Den ene af betingelserne for at processerne settling-lag scour-lag kan virke er altså til stede. Det er endvidere vist, at det suspenderede sediment optræder i flokkuleret tilstand i vandfasen med ækvivalente falddiametre på ca. 13 μ, hvilket ydermere giver mulighed for at »lag«-processerne kan virke. Disse leverer primært materiale af marin oprindelse, hvis de er virksomme. Da over 80% af materialet, der udgør turbiditetsmaximumet, er af marin oprindelse, kan der på baggrund af ovenstående ikke være tvivl om, at det er processerne: settling-lag scour-lag, der er de vigtigste faktorer for opretholdelsen af turbiditetsmaximumet i den nordlige del af Ho Bugt.

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