

Flood Control ,The Known Important Aspect of Water Resource Management .

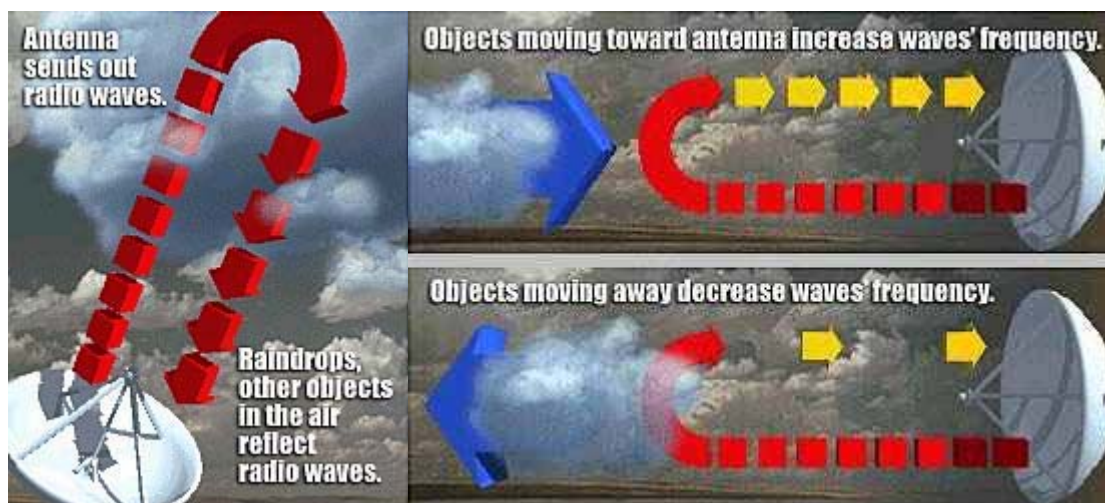
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“Oh dear ! I have not seen such a heavy Rainfall in Mumbai in my life time!”...a comment overheard! Well a “One –in-Hundred Year Flood Cycle “covers much more than the life span of an average human being.. The dams and similar such constructions are in general constructed even for such extreme Rainfall / Floods. It is also important to note that this extreme flood may come in any year and not necessarily after completion of every 100 Years Cycle! The damages due to extreme flood conditions are the results of the sharp rising trend of Urbanization and Industrialization .The trend is not only limited to India but experienced by many developing Countries as well. The point that is very important is that whether we are ready to face situation or are we aggravating it!

At this juncture let us see which disasters, in general, can be predicted or otherwise:

- 1) Earthquakes (Location /Intensity/Time) in general can not be predicted. The various zones can indicate the comparative Earthquake Prone areas.
- 2) The Tsunami can be predicted technically in general. The height of about meter and odd in deep sea may end in severe ten meter height when it touches the coast and as such the mere satellite pictures alone , are not conclusive . The travel time however is useful for getting advance intimation.
- 3) The Cyclones can be predicted in general.
- 4) The Rainfall in Mountain Areas after precipitation can be measured and actual flood which can be caused can be calculated .Keeping in view the Travel time in the valley the flood can be indicated to the Authorities in advance. In case there are dams upstream of Major Cities the floods can be controlled to large extent. (Reference: Flood Control, Khadakwasla dam vis-à-vis Pune City, Aug-2005.)

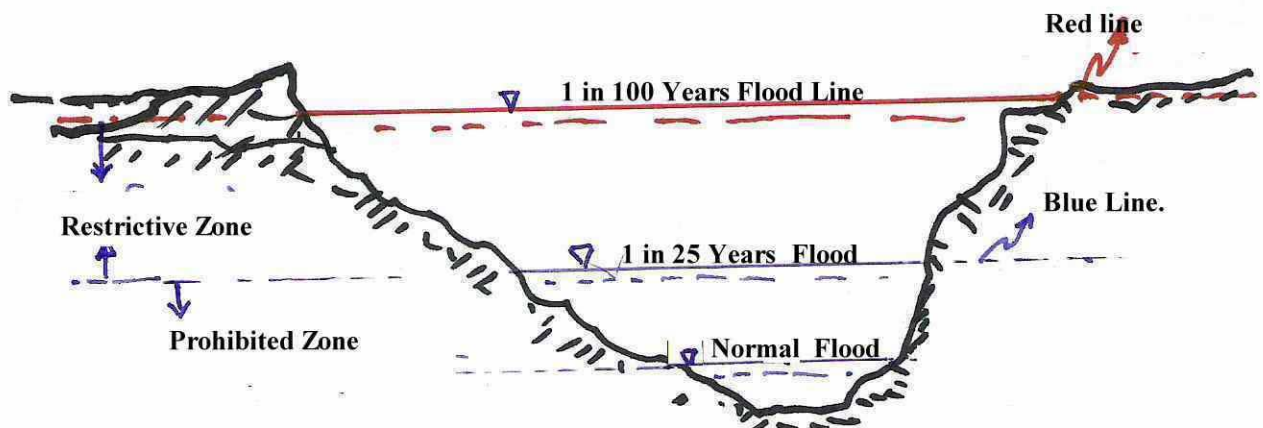


Sketches showing working of Doppler Radar

- 5) The prediction of heavy rainfall and subsequent Floods for coastal areas, like the recent Mumbai Flood- Calamity , is comparatively difficult but not impossible considering the modern Scientific and Technical Developments / Softwares available at Global Level. Let us concentrate on this item.

The recent experiments carried out (Maharashtra State-2004) about Artificial rainfall indicated encouraging results; it is noted . The basic on spot study involves Computerised analysis of Clouds so as to get information of quantum of water and subsequent quantity of chemical to be injected. On this background the discussions with the Scientists in this field indicate that the floods can be predicted days in advance with the help of Radars and some of the Developed Countries are already doing it. It is very desirable that in India we adopt this system on priority.

The most important point is whether we are ready to face and handle such chronic conditions allowing natural drains /nallas/ rivers to flow without any artificial obstruction / Encroachment. I am afraid not. As far as Maharashtra State is concerned ,the Resolution issued long back in the 1989 for river floods , is very clear . It specifies once in 25 years flood line as Blue line and one in 100 years flood line as Red line .(Vide the sketch attached). The area below blue line is restricted area. There can be only Gardens/ Play ground in this area. The guide lines are also for the type of structures in between Red line and the Blue line. If these rules are followed sincerely and strictly by everybody concerned including the citizens, lot of flood damage-intensity in Big cities can be reduced.



River Cross Section Indicating Flood lines and Flood Zones

Geographically, the case of Mumbai is some what different . In British Raj the City was formed connecting islands. Then came Marine Drive with Tetrapods to protect the made up land . The continuation of this process is a matter of History. In this process the Drainage system gets largely affected particularly in High Tides. The further pressure of Urbanization / Industrialization in Mumbai and other big Cities indicate encroachment even in River bed (Restricted Area). This causes rise in Blue Line and Red line. The

extent can be seen if model studies are carried out, for example, at Internationally acclaimed CWPRS, Khadakwasla ,Pune.

Now that we have got the Technical Expertise of World Class in our Country with Services of Stationary Satellite, the effective Disaster Mitigation / Prediction of Tsunami etc. in near future, is quite possible. In this context I want to point out two contemporary Case Histories. The first is that of Ahamadabad city, where about 25000 people lost their lives in Earthquake (6.5Richter`s scale.26th Jan.2001.) The main cause was the building collapses. At near about the same period a 6.5 R.S.Earthquake took place at Seattle City, USA where only one person died and that too because of the heart attack!. I have received an e-mail with video clipping taken during the actual Earthquake as attached file at Pune, just in couple days after the earthquake at Seattle.

In India we have got the capabilities to have such fast communication / Technical abilities. So, what we are waiting for? This is a Team Work. It is said that “The calamities don’t come singly but in Battalions!” Let us unite in thousands to face many such battalions and show the World what we United Mankind can do!