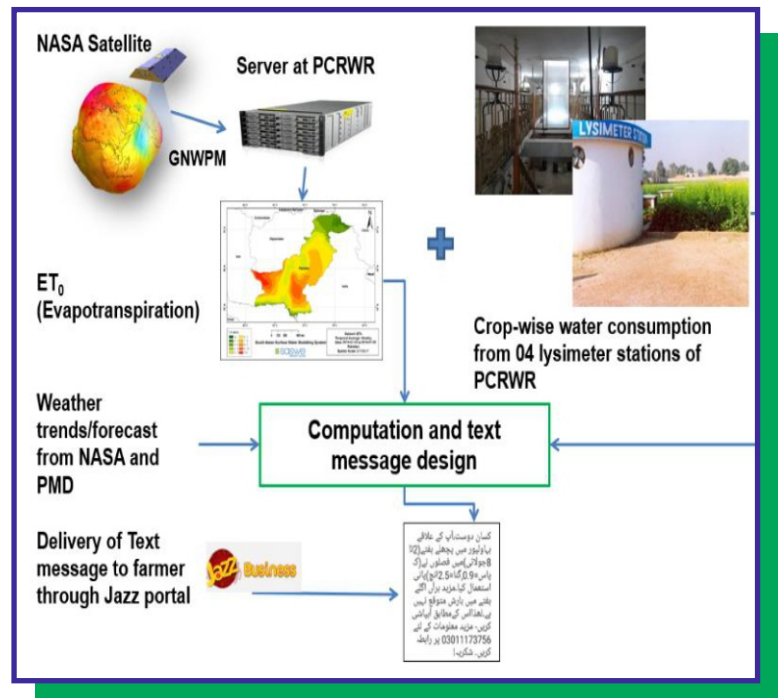


# Irrigation Advisory Service through SMS (20,000 farmers of 41 districts per week)

Agriculture is the largest consumer of fresh water (over 93%) in Pakistan. More than half of this water is lost due to conventional irrigation methods and lack of knowledge about irrigation scheduling. As a result, farmers end up irrigating their crops according to their experience and traditional methods. Therefore, they apply irrigation more water than actual Crop Water Requirement (CWR). Scientific information of CWR enabling farmers “When to irrigate and how much to irrigate” needs to be shared with them for greater benefit of the nation.

## Irrigation Advisory Service

PCRWR has launched Irrigation Advisory Service (IAS) for the farmers. It has already determined CWR of major crops through drainage-type lysimeters in major agro-ecological zones of Pakistan. Remote sensing techniques and satellite data have enabled the estimation of real-time ETo (evapotranspiration) over each district of the country. Scientific research data combined with Satellite product, generates information on irrigation requirements of a particular crop in a specific district. This information is then sent to registered farmers through a weekly Urdu SMS. Satellite remote sensing support is provided to PCRWR by University of Washington, USA.



Flow chart for Irrigation Advisory SMS

## The Process

The computation process behind advisory service is as follows:

1. The ETo values are result of Global Numerical Weather Product Model that incorporates data from various satellites. This data is then downloaded to server located in PCRWR jointly managed with University of Washington USA.
2. The effective rainfall (75% of the total rainfall) are downloaded from Accu Weather and PMD. Weekly CWR is estimated using satellite provided (ETo), Crop coefficient values (Kc) from Lysimeter of PCRWR, effective rainfall (R) and assuming application efficiency of 75%;

$$\text{Weekly CWR} = \{(ETo - R) Kc\}$$

1. As a result of above calculations an advisory message is prepared and sent to farmers district by district. This bulk SMS service is acquired from a cellular phone company engaged through a competitive process.
2. The existing beneficiary farmers are interviewed time to time to update the database and to improve the efficiency of services. For instance, based on farmer's feedback, Banana, Papaya and Chilli crops have been included into advisory.

کسان دوست، آپ  
کے علاقے حیدرآباد  
میں پچھلے ہفتے (2 تا  
8 جولائی) میں فصلوں نے  
(گنا=2.4، کپاس=1.1 اور  
کیلا=3.5) پانی استعمال  
کیا۔ مزید برآں اگلے ہفتے  
میں بارش متوقع نہیں ہے۔  
لہذا اس کے مطابق آبپاشی  
کریں۔ مزید معلومات کے لئے  
03011173756 پر رابطہ  
کریں۔ شکریہ!

### Farmer's feedback

*Good work, it helps farmer to understand current weather /water situation of the crop.*

**Muhammad Usman, Multan**  
**Land 2 acres**  
**Qualification: Middle**

*Helps me for preparing myself for next week, Good Work!*

**Faraz, Peshawar**  
**Land 5 acres**  
**Qualification: MA**

### Irrigation Advisory Message

*My son reads the message and inform me. I have reduced number of irrigations.*

**Saeed, Sialkot**  
**Land 100 acres**  
**Qualification: Not educated**

*Good Service, Saves our fuel cost.*  
**Saqid, RY Khan**  
**Land 20 acres**  
**Qualification: Middle**

### Testimonial

If farmers could be told specifically how much to irrigate, to ease the fears that cause them to overwater, then traditional mindsets could begin to change. EoS, 98. June 2017

<https://doi.org/10.1029/2017EO075143>

On the 50<sup>th</sup> Anniversary of World Earth Day, NASA features PCRWR-UW IAS services as Satellite data used to empower smallholder farmers in Pakistan and India. This irrigation advisory service for farmers of Pakistan is the precursor of same services in India and Bangladesh

<https://gpm.nasa.gov/resources/celebrating-earth-day-gpm>

The messages come from a fully-automated system that does everything from downloading publicly available satellite data and distributing the text messages to using models to compute how much each farmer needs to irrigate.

Ben Thompson, Voice of America, June, 2017

New farmers may register themselves for PCRWR-IAS services by visiting the link <http://www.pcrwr.gov.pk/advisory.php>, or dialing 03011173756.