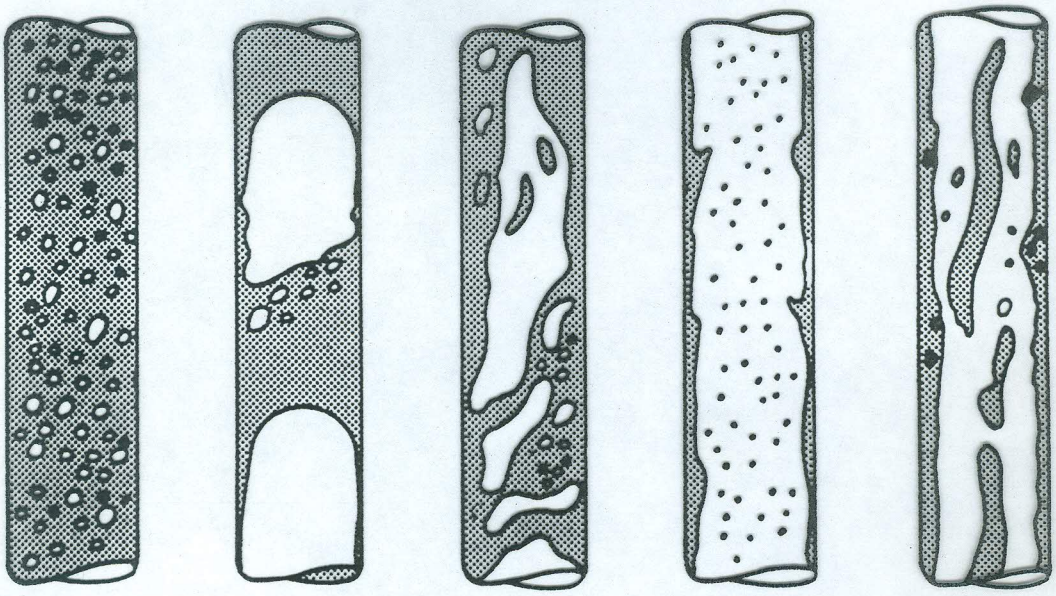
Flow patterns in vertical gas-liquid flow



Bubble Flow

Slug or Plug Flow

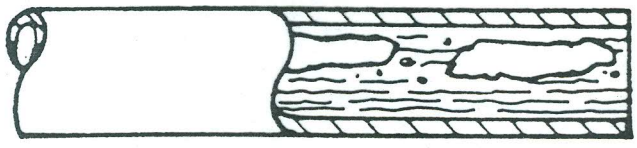
Churn Flow

Annular Flow

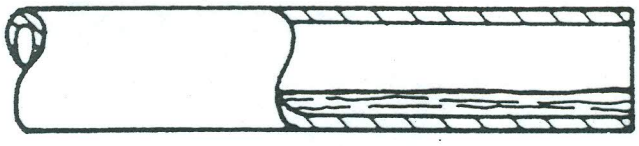
Wispy Annular Flow

Flow patterns in horizontal gas-liquid flow

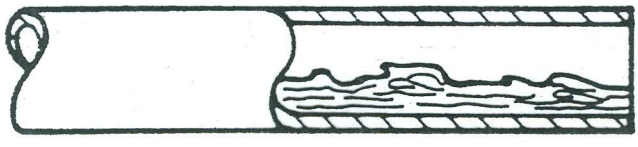
Bubble flow



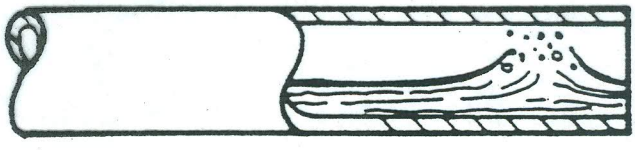
Plug flow



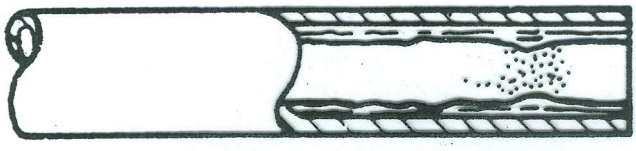
Stratified flow



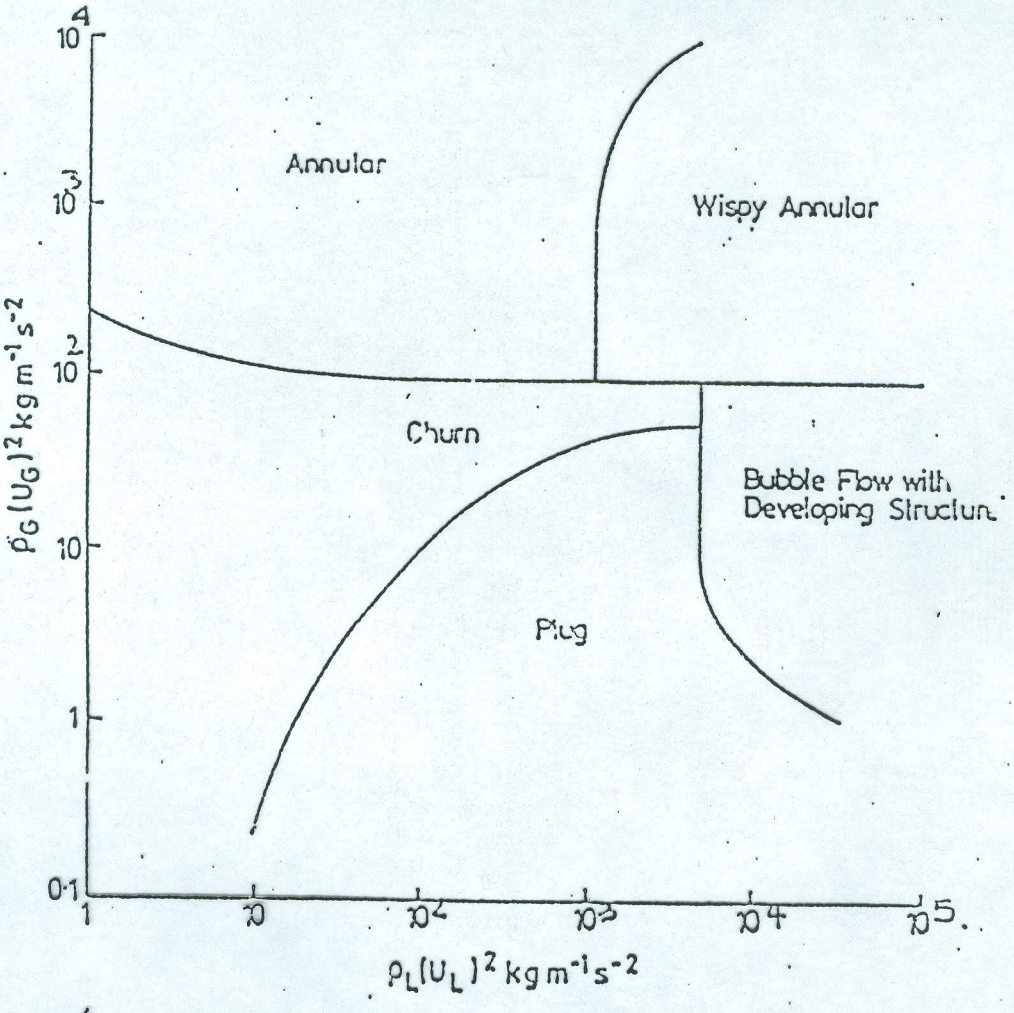
Wavy flow



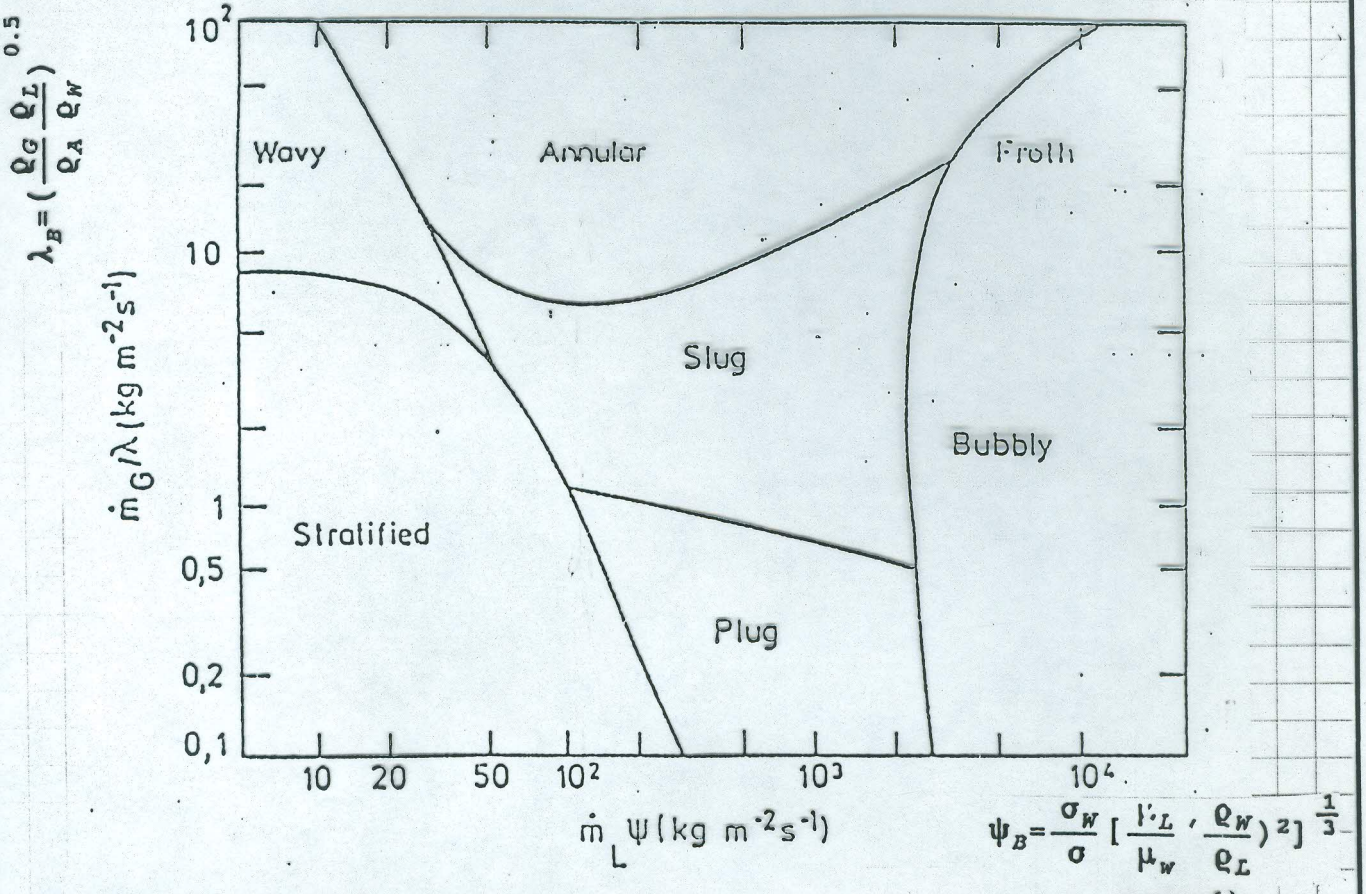
Slug flow



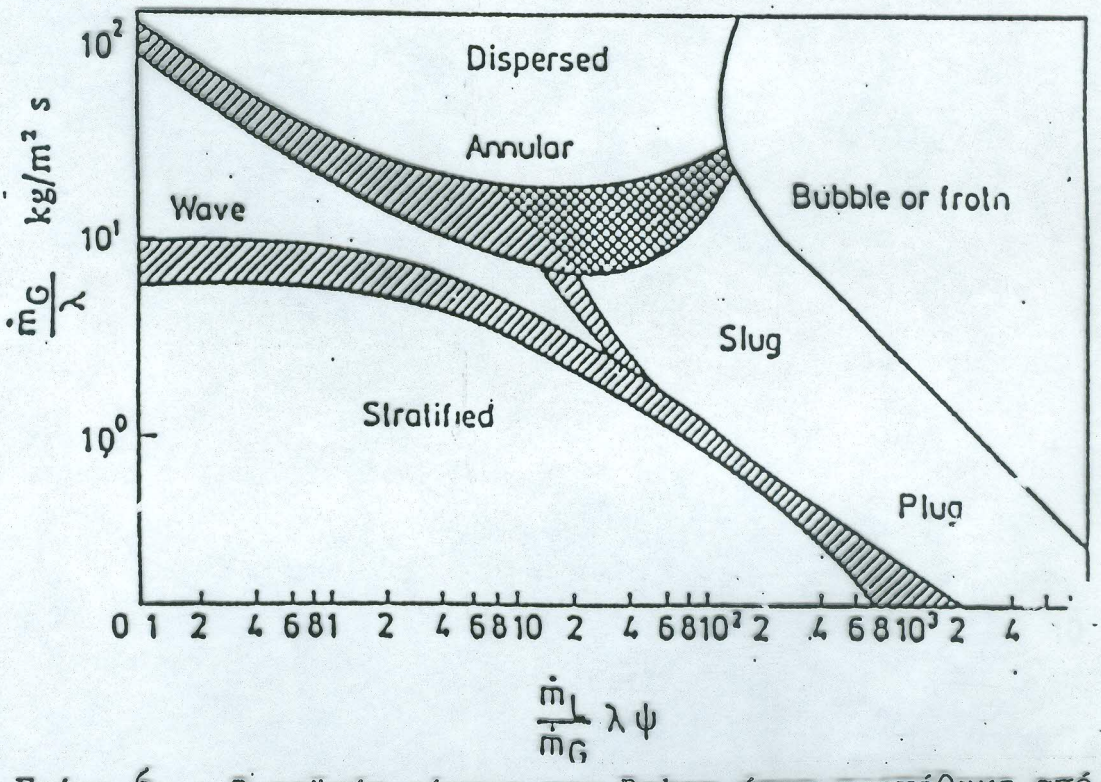
Annular flow



Σχήμα 4 : Ροϊκός χάρτης των Hewitt & Roberts για κάθετη μεταφορά αέρα-νερού



Σχήμα 5 : Ροϊκός χάρτης του Baker γιά οριζόντια μεταφορά αέρα-νερού



Σχήμα 6 : Ο ροϊκός χάρτης του Baker όπως προτάθηκε από τον Bell

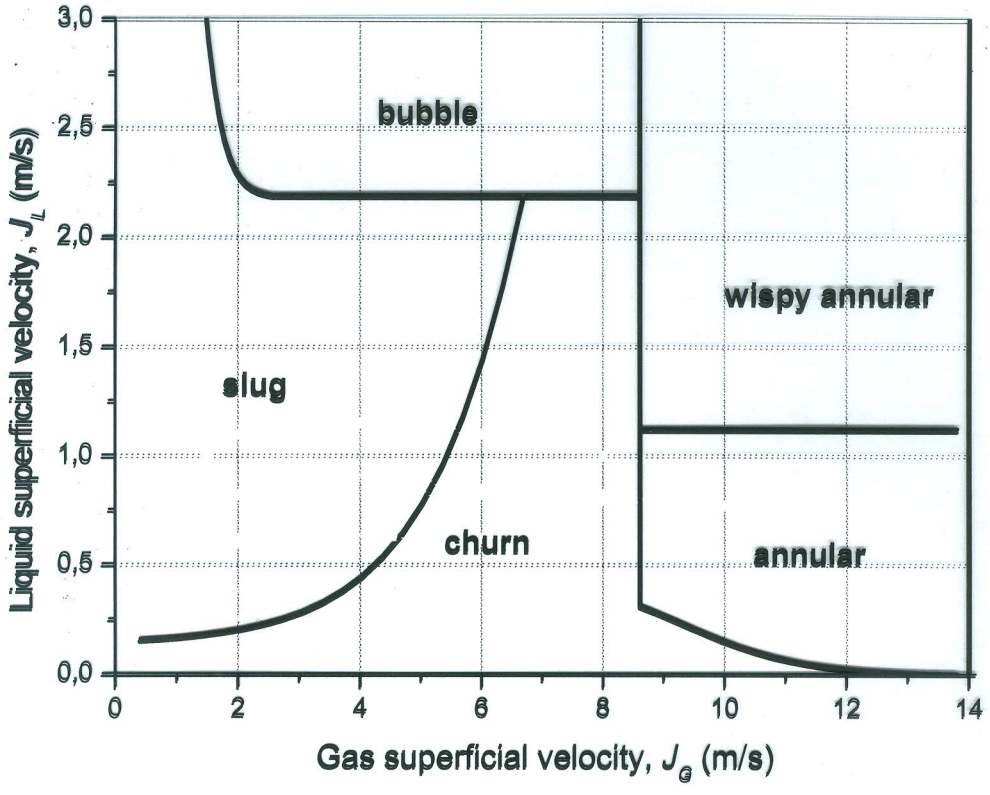


Figure 1. The new proposed two-phase flow regime map (Samaras-Margaris 2005).

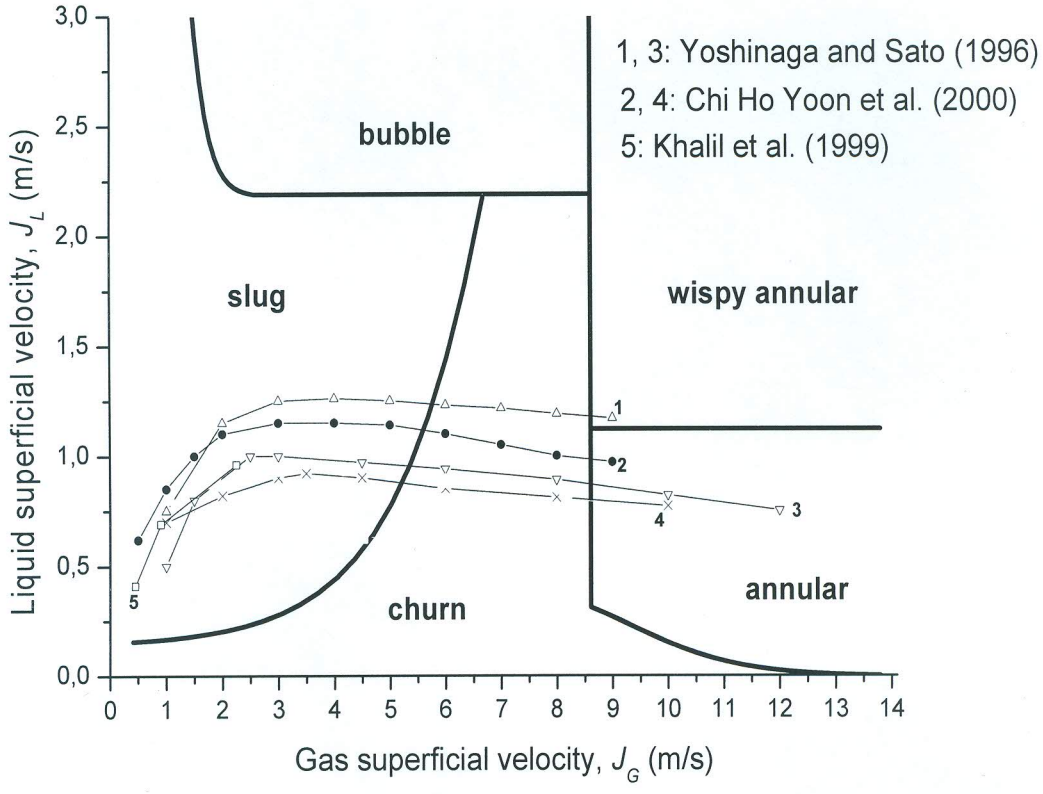


Figure 2. Presentation of airlift pump performance experimental data in $J_L(J_G)$ map.

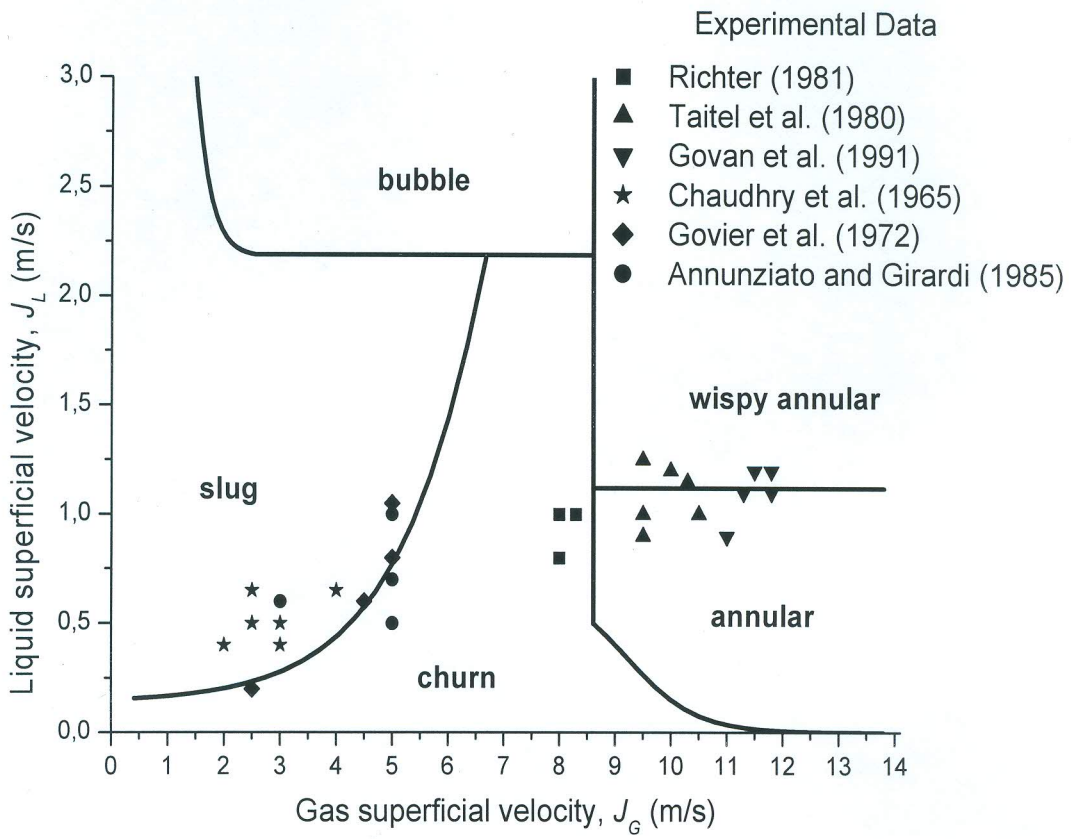


Figure 3. Validation of the regime map through regime transitions experimental data.

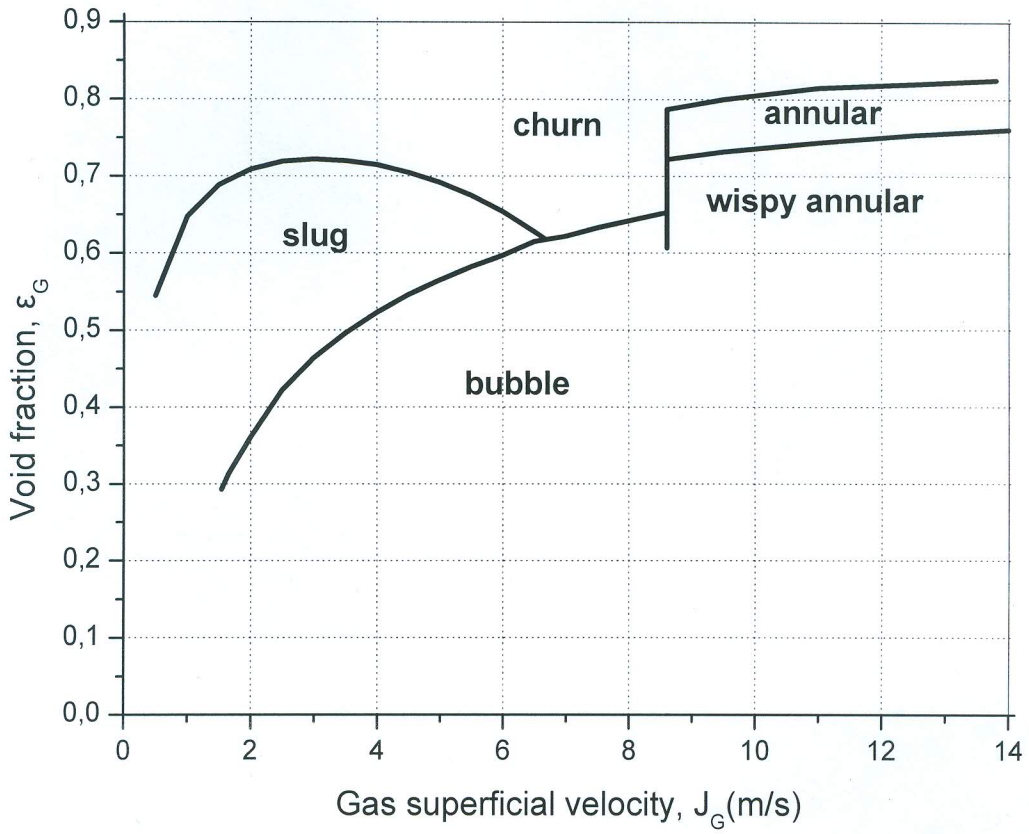


Figure 4. Two-phase flow regime map, $\varepsilon_G(J_G)$.

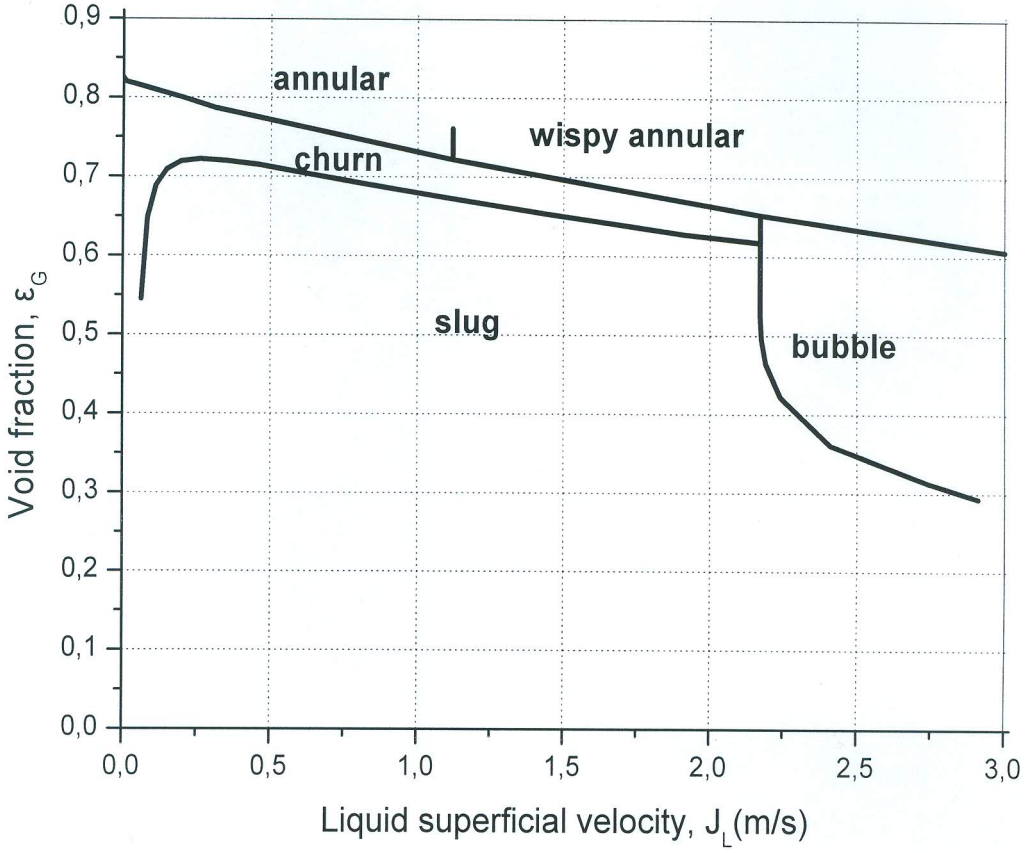


Figure 5. Two-phase flow regime map, $\varepsilon_G(J_L)$.

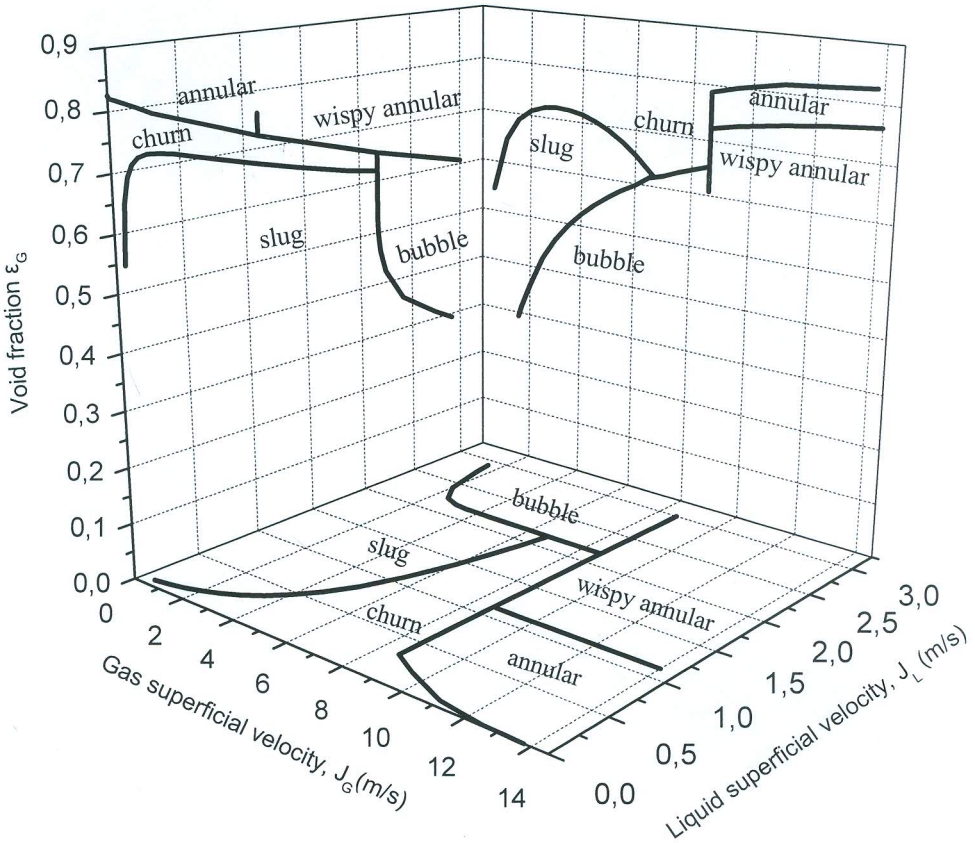
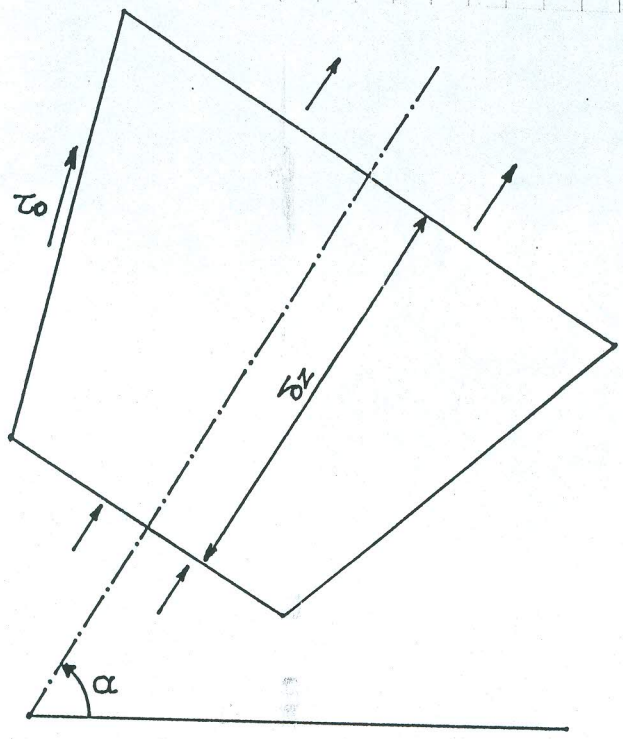


Figure 6. Three dimensional presentation of the three new regime maps.



Σχήμα 3.2 : Στοιχειώδης όγκος ελέγχου ρευστού για το μοντέλο της ομογενούς ροής.

$$-\frac{dp}{dz}=\frac{\tau_o P}{A}+\frac{d(\dot{m}^2/\rho_{II})}{dz}+g\rho_{II}sina$$

$$-\frac{dp}{dz}=-\frac{dp_f}{dz}-\frac{dp_a}{dz}-\frac{dp_g}{dz}$$

όπου $dP_f=\tau_o P/A$: Πτώση πίεσης λόγω τριβής

$dP_a=d(m^2/\rho_{II})/dz$: Πτώση πίεσης λόγω επιτάχυνσης

$dP_g=g\rho_{II}sina$: Πτώση πίεσης λόγω βαρύτητας.

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ΥΠΟΛΟΓΙΣΜΟΣ ΤΗΣ ΠΤΩΣΗΣ ΠΙΕΣΗΣ ΛΟΓΩ ΒΑΡΥΤΗΤΑΣ

$$\frac{dP_g}{dz} = -g\rho_H \sin a$$

$$\rho_H = \frac{\rho_G \rho_L}{x\rho_L + (1-x)\rho_G}$$

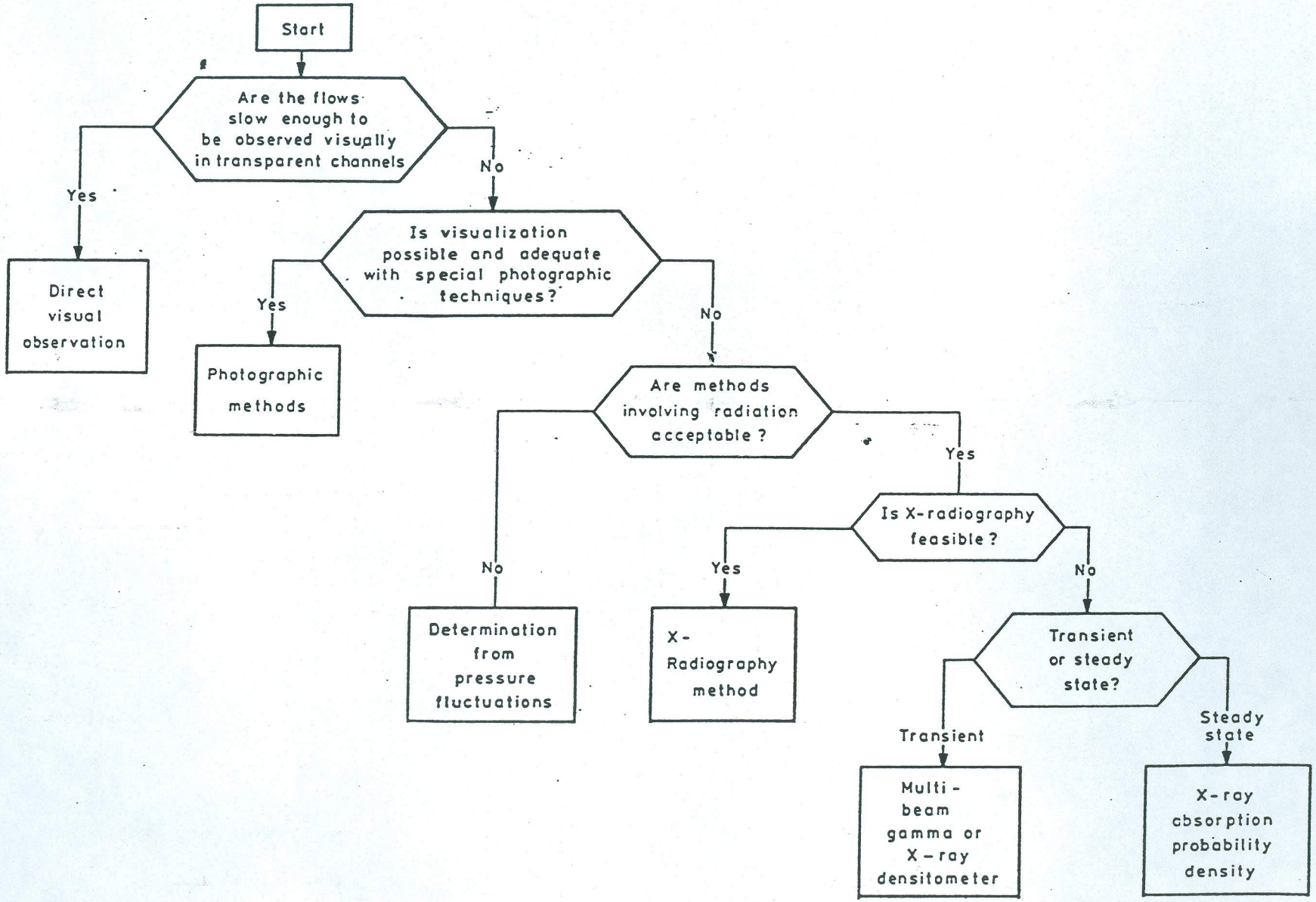
$$\frac{dP_g}{dz} = -g(-\rho_L a + \rho_L + a\rho_G) \rightarrow$$

$$\frac{dP_g}{dz} = -g[(1-a)\rho_L + a\rho_G]$$

ΥΠΟΛΟΓΙΣΜΟΣ ΤΗΣ ΠΤΩΣΗΣ ΠΙΕΣΗΣ ΛΟΓΩ ΕΠΙΤΑΧΥΝΣΗΣ

$$\frac{dP_a}{dz} = -\dot{m}^2 \frac{d(1/\rho_H)}{dz}$$

$$\frac{1}{\rho_H} = \frac{x}{\rho_G} + \frac{1-x}{\rho_L}$$



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